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Stylistic variation in African American Language: examining the social meaning of
linguistic features in a Seattle community

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Abstract

Stylistic variation in African American Language: Examining the social meaning of linguistic features in a Seattle community

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Linguistic features associated with African American Language (AAL) may have a large set of ideological and functional meanings beyond ethnic identity. While sociolinguists know a lot, comparatively, about regional and social differences in the use of features associated with AAL, we know less about how features associated with AAL operate in various interactions and situations. This study presents an opportunity to better understand features associated with AAL among speakers from the Pacific Northwest – specifically focusing on one multi-ethnic community of speakers who were raised in Yesler Terrace in Seattle, Washington. It situates phonetic and phonological variation at the intersection of ethnoracial identity, place, and style, analyzes stylistic (within-speaker) uses of linguistic features in interaction, and considers how individuals enact a range of identities using linguistic features associated with AAL in practice.

The dissertation includes three analyses for this study: a descriptive analysis of vowel phonology among a sample of YT members, an Audience Design analysis of stylistic shifts in a single speaker, and a Speaker Design analysis of four speakers, looking at shifts in their use of a linguistic variable across the span of their respective interviews. The study contributes to our understanding of ethnicity and vowel variation in the Pacific Northwest, and finds that African American speakers in YT distinguish themselves from their European American peers by drawing on both super-regional features associated with AAL and features that are understood more as broad regional features. It shows that features associated with AAL can be utilized as a resource for meaning-making, outside of merely signaling some aspect of ethnicity. The study finds that /aɪ/ reduction in particular is available for YT members across ethnic lines as a linguistic resource, and argues that use of reduced /aɪ/ within YT operates, to some extent, independently of its group-associational meaning as an AAL variant. The study asserts that reduced /aɪ/, within the context of the YT interviews, can be used to signal particular working-class attitudes and values associated with growing up in Yesler Terrace. It argues more broadly that the use of linguistic features associated with AAL can be influenced by not only the ethnic makeup of a community, but also by community members' ethnoracial attitudes, community values, and by a conversation's interactional context. This work suggests that within multi-ethnic communities, the use of features associated with AAL may be more flexible, granular, and unbounded, and the social meaning of variants associated with AAL may be tied to locally salient values and identities.

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DEDICATION

To Kay, always.

Chapter 1. INTRODUCTION

1.1 PROBLEM STATEMENT

Though the seminal work on North American dialectology, the *Phonological Atlas of North American English* (Labov, Ash, & Boberg, 2006), states that Pacific Northwest English is not distinguishable from dialects found in other parts of the American West, there is a growing body of work identifying the ways in which speakers in Pacific Northwest do distinguish themselves phonologically from nearby peers. Early sociolinguistic work in the Pacific Northwest by Carroll Reed argued that speech in Washington resembled that of southern Illinois and Iowa and was distinct from that of Northern California (1965). More recently, work by Wassink (2015, 2017) has identified some major phonological differences between Pacific Northwest English and varieties of English found in California, including marked differences in /æ/ and /ɛ/ production.

This study presents an opportunity to better understand language in the Pacific Northwest, by focusing attention on African American Language (AAL)¹ among speakers from the Pacific Northwest – specifically focusing on one community of speakers who were raised in the public housing community of Yesler Terrace, in Seattle, Washington. African American Language (AAL) refers broadly to varieties of English spoken by African Americans, or features used by African American people in a variety of communities (Lanehart, 2015). AAL is a longstanding topic of interest in sociolinguistics. AAL figured prominently in early sociolinguistic discussions of social and educational issues (Labov, 1969), and continues to be a much-studied topic in sociolinguistics today (Lanehart, 2015). It also stands as a well-studied instantiation of a broad race-based identity for many Americans. Features are common enough across geographic distances that at times the dialect has been considered as broadly consistent across geographic divides, despite some regional differences (Labov et al., 2006). It is one of the most-studied dialects in North American sociolinguistics. However, regional varieties of AAL are not as well studied as their Mainstream US English counterparts, even with recent increased attention to

¹ §3 contextualizes the term AAL within sociolinguistic practice and gives a justification for the term in the present study.

regional variation in AAL (Yaeger-Dror & Thomas, 2010). Crucially, we as sociolinguists don't know much about where Seattle is in regards to AAL. African Americans settled in Seattle early in its history and maintained a small-numbered presence up until the mid-twentieth century. Seattle was subject to African American immigration patterns in much the same way as other Northern cities were – in particular, the Great Migration in the mid-twentieth century (Tolnay, 2003) contributed greatly to the Pacific Northwest African American population, and racially-informed housing covenants were common in Seattle and continue to influence the distribution of African Americans in the city today. But, as Taylor (2011) notes, and as subjects of the current study relate, race relations in Seattle were qualitatively different than Northern cities in other parts of the country. African Americans never comprised more than one percent of the total Seattle population prior to the Great Migration; Taylor (2011) argues that because of the small numbers of African Americans in Seattle pre-1940, Seattle wasn't subject to the mounting racial tension found in many other large American cities at the time. African American life, particularly in the Central District, was vastly different from that of black communities in Northern cities, in terms of residential segregation, educational attainment, and housing conditions (Taylor, 2011). The unique historical circumstances related to ethnicity and race in Seattle may suggest that, to study AAL in Seattle, it's necessary to adopt a different approach to ethnoracial identity² and language than is prevalent in AAL work in sociolinguistics.

Additionally, while there is, speaking roughly and broadly, general consensus about the phonological, morphological, and syntactic features of AAL as a whole, the use of regular AAL features is not limited to African American speech or emblematic of an African American identity. So, understanding the social meaning of linguistic variables associated with AAL is important, because often these features have a large set of ideological and functional meanings, of which African American-ness is just one. Many features of AAL are also commonly found in other regionalized or socially stratified varieties of English. For instance, because of the history of African American slavery in the American South, features of AAL and Southern white

² This study uses the term 'ethnoracial identity' to refer to both identity as informed by cultural heritage (ethnicity) and as informed by sociohistorically-defined phenotypic distinctions (race), since the two aspects of individuals' identities cannot easily be disentangled. Ethnoracial identity, then, is a multifaceted construct that "captures individuals' identities as informed by both ethnic features of their ancestral heritage (e.g., cultural traditions, language) and the racialized nature of their group in a particular sociohistorical context (e.g., marginalization as a function of ethnic minor status)" (Umaña-Taylor and Douglass, 2017, p. 438).

vernacular speech overlap to a great extent (Wolfram and Schilling-Estes 2006). For these reasons, this study describes the linguistic features under study as ‘features associated with AAL’, rather than ‘AAL features’; while this description emphasizes the study of particular linguistic features in sociolinguistic research on AAL, it also allows that these features may be used more broadly outside of specifically African American enclaves. We know a lot, comparatively, about regional and social differences in the use of features associated with AAL, but we know a lot less about how features associated with AAL operate in the full range of interactions and situations. This study is an addition to the growing field of research into AAL in interaction, as it relates to place, race, and identity (Britt, 2011; Nylund, 2013; Becker, 2014; Grieser, 2014; King, 2016).

1.2 GOALS

Through this study, I aim to contribute the following insights:

1. A description of how African American Language is used in a region that has not, in large part, been a focus of linguistic study. One particular goal of this analysis is a better understanding of whether and how Seattle-area African Americans use linguistic features that are understood, on some level, as Western or as Pacific Northwestern features.
2. A better understanding of how community- and individual-level variation can interact. Because this study looks at variation across ethnoracial groups in YT, as well as at variation in the speech of individuals within this community, it contributes to our understanding of the range of linguistic variants found in the community more broadly, and, considering this range of linguistic variants as a set of resources from which individuals can draw, to our understanding of linguistic resources at the community level and their use towards meaning-making in interaction. Like a few other recent studies (Nylund, 2013; Becker, 2014; Grieser, 2014), this work details the complex relationship between ethnicity, place, and linguistic features.
3. A description of the social meanings of linguistic variables associated with AAL in this one group of speakers. Often the features associated with AAL have a large set of ideological and functional meanings, of which African American-ness is just one.

Like Nylund (2013), I argue throughout this study that that social groups are inherently linguistically diverse, and attempt to take this diversity as a linguistic fact rather than assuming at the onset that individuals who live in a given community inherently share a set of attitudes and linguistic evaluations. This point is especially important in diverse linguistic communities where several different types of social groupings may be putting pressure on individuals to think and act a certain way (Bortoni-Ricardo, 1985). This is by no means to discount the idea that communities are patterned in their use of linguistic features, but this approach acknowledges that individual speakers may reflect on and reflect group-level and broader sociolinguistic patterns in vastly different ways. This understanding of individual speakers as autonomous and thoughtful practitioners of language requires researchers to attend to both group-level and individual interactional dimensions of language use in order to identify the social meanings of linguistic variables.

1.3 DATA

The data from this study are drawn from interviews with members of a public housing community of Yesler Terrace (YT), in Seattle, Washington. The interviews were conducted between 2006 and 2009 with members of the community who grew up in YT in the 1950s and 1960s. YT is a community particularly well-suited for investigating AAL in the context of interethnic contact, because it shows historically high levels of ethnic integration, within an environment where racial relations were less fraught than other parts of Seattle (and the nation) at the time. Chapter 4 describes the history of YT and the community under study in more detail, as well as the methodological details for the interviews.

1.4 ANALYSES

The study includes three distinct analyses, with three distinct goals. I begin with a variationist analysis of these variables among YT speakers (§6). The variationist analysis takes as an object of investigation the distribution of features within the community, along ethnoracial lines. I analyze how these features pattern at the community level, looking at African American and

European American distributions. While one earlier study (Wassink 2015, 2017) does examine vocalic features in the speech of Seattle-area African Americans, Seattle-area African Americans are still an understudied population in linguistics, and the use of features associated with AAL within this population has not been studied to this point. The patterning of these features also contributes, in part, to the stylistic potential of the variables for identity work relating to ideas of race, place, class, and interactional strategies. Thus, the variationist analysis helps to put the stylistic variation analyses (§7-8) in context.

The second and third analyses take a look at stylistic (i.e., intra-speaker) variation, with the goal of better understanding the social meaning of the linguistic variables under study. The second analysis (§7) takes an Audience Design approach to study Orchestrated Situational shifts – shifts primarily due to relationships between interlocutors that arise from investigator study design (Rickford, 2014). In this particular case, I observe one speaker's intra-speaker variation based on the ethnicity of her interlocutors, along with other interlocutor variables that varied within the interview context. This study is relatively unique within Audience Design approaches, though, because it studies one interviewer (but cf. Trudgill 1986 for one example of a similar approach).

The third analysis (§8) takes a Speaker Design approach to investigate how one variable, /aɪ/, is used variably in interactions. Shifts in /aɪ/ in this analysis are understood as Serendipitous Metaphorical shifts – that is, as shifts that are initiated by the speaker to signal some shift in stance, position, and topic. This analysis can be understood as a community-as-value approach, because the shifts I observe are described in relation to values expressed as representative of YT from interviews with YT members.

The study, then, situates phonetic and phonological variation at the intersection of ethnoracial identity, place, and style. I analyze stylistic (intraspeaker) uses of these linguistic features in interaction, and consider how individuals enact a range of identities using these features in practice. This study is an exploration of how non-categorical linguistic variables can be used to do linguistic work, including and beyond ethnoracial identity work.

1.5 OVERVIEW OF CHAPTERS

Results from this dissertation speak to the goals posed above, while also raising questions for future work. Chapter 2 presents an in-depth review of stylistic (intra-speaker) variation in sociolinguistics, draws connections between stylistic variation and the social meaning of linguistic variables, and gives an overview of the approach to stylistic variation used in the current study. Chapter 3 gives an overview of different approaches to studying AAL in sociolinguistics, and gives particular attention to AAL studies that have focused on stylistic variation. Chapter 4 describes the community of speakers under study – former residents of YT – in historical terms, identifies the ways in which this community is different from others studied in sociolinguistics, and describes what can be learned from looking at speech within this community. Chapter 5 identifies the vowel features that are studied in this dissertation and describes how each linguistic variable relates to place and ethnicity in linguistic research. Chapters 6 through 8 describe the three original analyses for this study: a descriptive analysis of vowel phonology among a sample of YT members (§6), an Audience Design analysis of stylistic shifts in a single speaker (§7), and a Speaker Design analysis of four speakers, looking at shifts in their use of a linguistic variable across the span of their respective interviews (§8). Chapter 9 summarizes the methods and findings of the three analyses, discusses how they contribute to sociolinguistic theory, and outlines future directions suggested by the data.

1.6 NOTATION

Throughout this dissertation I will introduce vowels using standard IPA notation alongside the word classes set forward by Yaeger-Dror & Thomas (2010), which put the vowel class of interest within a B_T or similar frame (e.g., BIT to refer to /ɪ/ in vowels like *bit*, *sit* and *tip*), and adjust the frame when referring to conditioning factors from adjacent consonants (e.g., using PIN to refer to /ɪ/ before nasals). Where Yaeger-Dror & Thomas have not given a word class for a particular phonological environment, I will define one and give a list of words belonging to it.

Chapter 2. BACKGROUND – STYLISTIC VARIATION

2.1 INTRODUCTION

This chapter outlines three distinct approaches to analyzing stylistic variation in sociolinguistics, with particular focus on a Speaker Design approach (Schilling-Estes 2004, 2013). It emphasizes that Speaker Design approaches: 1) feature multidimensional approaches to style, and 2) are particularly well-suited for the analysis of creative stylistic variation, or stylization, and the creation of personae (Coupland 2001, 2007). It considers stylization as a phenomenon that occurs within interactive contexts (LePage and Tabouret-Keller 1985, Bucholtz and Hall 2005, Bucholtz 2009, Miller 2013). It considers the relationship, on the one hand, between style and Situational style shifting, and, on the other hand, between stylization and Metaphorical switching (Blom & Gumperz 1972, Rickford 2014). It describes the need for an analytic induction approach (Peräkylä 2011) to describe Metaphorical style shifts. It gives an overview of the concepts of speech community and verbal repertoire (Gumperz 1972), along with related concepts (Benor 2010), and identifies relationships between these concepts and stylistic variation. It describes relevant approaches to style and identity (Kroskrity 1999, Tracy 2002, Gumperz & Gumperz 2007, Noels 2014). It defines the concepts of indexicality and other concepts related to the social meaning of linguistic variables (Eckert 2008, Preston 2010, Johnstone & Kiesling 2008). Lastly, it gives an overview of the approach to stylistic variation used in the current study.

2.2 SOCIOLINGUISTIC APPROACHES TO STYLISTIC VARIATION

Work across theoretical traditions recognizes that a speaker's linguistic output is dependent both on the range of linguistic forms available to the speaker, on the one hand, and, on the other hand, creative use of language in interaction within a speech event (Goffman 1981, LePage and Tabouret-Keller 1985, Biber and Finegan 1989, Bucholtz and Hall 2005, Guy and Cutler 2011). Stylistic variation is broadly relevant to sociolinguistic description: in Labov's (1972) maxim, "There are no single-style speakers" (112). In sociolinguistics, there have been essentially three perspectives on 'style':

- 1) style as within-speaker variation ranging from more casual to more careful speech according to the formality of the speech situation and the degree of attention paid to speech itself (i.e. attention paid to speech; Labov 1972b);
- 2) style as within-speaker variation based on a desire for convergence or divergence from interlocutors' linguistic usages and/or social attributes (i.e. audience design; Bell 1984, 2001); and
- 3) style as the process by which a collection of linguistic resources are used towards a speaker's social goals in interactions; broadly speaking, a speaker's goals may align with considerations of formality, audience-related social closeness/distance, or other factors such as the projection of particular types of stances or personae (Schilling-Estes 2013).

Here I describe and critique each of the three approaches in turn.

2.2.1 *Attention to Speech model*

Labov (1972b) argues that style is intraspeaker variation based on the formality of the speech situation and the degree of *attention paid to speech*, and that a speaker's style varies in a linear fashion from more casual to more careful speech. While other theoretical strains in the study of speech style, even prior to early variationist work, considered many other conditions on stylistic variation, such as topic, setting, key, channel, and purpose, Labov's *attention to speech* approach gained strong prominence in the sociolinguistic literature.

The attention to speech model formulated by Labov (1972) was based on how self-conscious one's speech was. Labov identified styles of speech that closely represented a community's 'casual' (or 'vernacular') speech, and characterized it as diametrically opposed to speech that was influenced by the presence of a (somewhat foreign) interlocutor ('careful' or 'formal' speech). Labov operationalized style as something that can be manipulated or elicited over the course of the sociolinguistic interview, and postulated that casual speech could be identified alongside certain topics (childhood games and rhymes, and 'danger-of-death' experiences), addressees (e.g., conversations with peers), and paralinguistic channel cues (e.g., laughter).

Further, a sociolinguist could elicit self-conscious or careful speech through the use of increasingly formalized linguistic tasks, from reading passages to lists of minimal pairs. Labov (1972) observed that stylistic variation parallels social class variation: more casual styles tended to be used with greater frequency in lower social class groups, while more formal styles were found more often in higher class groups.

One criticism of the Attention to Speech model is the observation that distinguishing between casual and careful speech is not always straightforward (Wolfram 1969, Bell 1984). For instance, Preston (1991) noted that features of which speakers are exceptionally conscious tend to show unusual style shift patterns. Another is that Attention to Speech is a unidimensional approach (e.g., Romaine 1978), and some speech styles do not fit easily into a continuum of casual vs. careful or formal vs. informal speech (e.g., it is common for speakers to self-consciously shift into vernacular speech, as noted in Coupland 1980). Additionally, Schilling-Estes (2013) notes that the Attention to Speech model depends on a description of speakers as overly responsive or accommodating, when in fact speakers may make agentive shifts.

2.2.2 *Audience Design model*

Bell's (1984) Audience Design model modifies the Attention to Speech model somewhat, by drawing on Speech Accommodation Theory from social psychology (Giles and Powesland 1975), which holds that speakers create psychological closeness or distance from an addressee by converging towards or diverging from their addressee's speech. In Audience Design, speakers shift their speech based on the composition of their audience, rather than on the basis of attention paid to speech. Stylistic shifts under this paradigm can be *responsive* (caused by a situational change) or *initiative* (by which speakers use style to somehow redefine the existing situation). Linguistic shifts that correspond with shifts in topic or setting were described as modeled after the speech of addressees a speaker associates with the topic or setting. At its core, then, Audience Design is a way of describing how a speaker's linguistic features align with social attributes found in the larger community. At the same time, Audience Design represented a shift towards quantifying the relationships between interlocutors, and describing speech as based on interpersonal dimensions. Bell (1984) notes that there are three possible ways that speakers could respond to their audience:

- 1) Speakers assess the personal characteristics of their addressees, and design their style to suit.
- 2) Speakers assess the general style level of their addressees' speech, and shift relative to it.
- 3) Speakers assess their addressees' levels for specific linguistic variables, and shift relative to those levels. (167)

Studies provide evidence for each of these 3 possibilities. (1) has been invoked in a number of studies. For instance, Hindle (1979) argues that a Philadelphian woman named Carol Myers shifts her speech based on the genders associated with work and home, respectively. Rickford & McNair-Knox (1994) showed that speakers can shift according to (2), as well. In accordance with (3), Scanlon and Wassink (2010) argue that JH shifts her (ay) usage based on approximate levels of (ay) reduction found in her interlocutors.

While the original Audience Design model held that responsive shifts were primary and initiative shifts were derivative, Bell (2001) modified Audience Design somewhat to give more attention to initiative shifts. However, in this newer iteration of the framework, Bell retained the (1984) assertion that stylistic variation is derivative of and echoes social class variation in most cases (excepting cases of hypercorrection and hyperstyle). In other words, Audience Design maintains that an individual's stylistic shifts are derived from larger societal language patterns.

One criticism of the Audience Design model comes from a social constructionist perspective: that all linguistic resources at a speaker's disposal play a role in shaping all situations, and correlating styles with situations is fraught (see Coupland 2001). Schilling-Estes (2013) also notes that Audience Design is a unidimensional model of stylistic variation, as it postulates that all shifts (e.g., topic-based ones) are derived from audience effects.

2.2.3 *Speaker Design models*

More recently, variationists have made greater use of methods in line with those of ethnographers, anthropologists, sociologists, and the like, and are increasingly reliant on the recognition of locally salient aspects of identity and categorization, rather than using pre-

imposed categorizations or social categories (Schilling-Estes 2013). While early variationist approaches were almost exclusively phonological or morphological studies, more recent approaches to style shifting have attempted to account for variation based on pragmatic/interactional features, and have even linked linguistic style shift to non-linguistic aspects of stylistic practice, such as clothing (e.g., Eckert 2000). Schilling-Estes (2004) describes a *Speaker Design* model, making use of a social constructionist viewpoint within the context of unfolding talk. Speaker design acknowledges that individuals may have different approaches to utilizing the variation found in their community and, thus, in their repertoire. Speaker Design has some commonalities with Eckert's (2008a) concept of *bricolage*, in that speakers may idiosyncratically select from a set of variants available in their communities, and with Bakhtin's (1981) description of language as *heteroglossic* (whereby a speaker's linguistic choices are strategic and alternate among available choices). Schilling-Estes' (2004) perspective is that sociolinguistics could stand to benefit from incorporating such social constructionist approaches to the portrayal of identity in interaction. Schilling-Estes notes that it can be difficult to reconcile social constructionist views with traditional variationist approaches, particularly since variationist approaches have continued to involve quantitative analysis. Schilling-Estes (2013) describes a trend towards looking at variation as it patterns in unfolding talk rather than aggregating statistics from multiple speakers or multiple stretches of talk. Of note, she states that, at its core, intra-speaker variation is a phenomenon that occurs where the individual and the communal intersect and that the two entities relate to and influence each other. So, while individual speech somehow reflects patterns in the larger community, these patterns are also shaped by individuals through the course of day-to-day conversational interaction. Correspondingly, style shifts occur both in response to environmental elements and through agentive or creative use of linguistic resources. The Speaker Design model differs from Audience Design in two notable ways. First, while both models account for initiative stylistic shifts, such shifts are viewed in the Audience Design framework as either convergence or divergence from an interlocutor. Within the Speaker Design framework, creative shifts may be based on situational need to convey a broader range of stances or identities; Speaker Design approaches focus on speakers themselves rather than outside groups or influences as the reason for change. Second, Audience Design approaches usually take a quantitative variationist approach and aggregate use of linguistic forms across an entire speaker or group of speakers.

Speaker Design approaches, in contrast, often involve studying how linguistic forms may be performing important linguistic work even if their use is infrequent.

2.2.3.1 Speaker Design as a multidimensional approach to style

Speaker design, in contrast to the Attention to Speech and Audience Design approaches, is meant to account for stylistic shifts along multiple dimensions simultaneously. It is based on the idea that a speaker's identity and relationships with interlocutors are the factors motivating shifts in speech style. A speaker uses particular speech patterns in order to convey a *persona* in accordance with their chosen interactional goals. In contrast with Audience Design, which hypothesizes that larger macrosocial factors drive stylistic shifts, Speaker Design asserts that a speaker's identity and relationships with interlocutors are the main motivators of stylistic shifts. The Speaker Design approach defines style as the process a speaker uses to utilize linguistic resources for achieving social goals in interaction. Under this framework, the potential motivations for a speaker's stylistic shifts are broad, and could be based on considerations of formality, perceived or desired social closeness or distance to interlocutors, and the projection of certain stances or personae.

2.2.3.2 Speaker Design as creative use of stylistic resources and persona creation

An early example of research fitting within the Speaker Design framework is Coupland's (1984) case study of a Welsh travel assistant. He found that the travel assistant varied her use of several phonological variables closely according to that of her clients. However, the travel assistant varied her speech not only based on her interlocutor, but also based on topic (e.g., work vs. non-work) and channel (phone vs. in-person). While this could be described as evidence of accommodation, Coupland interprets these shifts as the creative projection of a particular identity:

Sue is NOT attempting to reproduce the actual levels of standardness for particular variables that she detects in the speech of her interlocutors; rather she is attempting to convey via her pronunciation and presumably other behaviors, verbal and nonverbal, a *persona* which is similar to that conveyed by her interlocutors. (65, original emphasis)

Coupland (2001, 2007) discusses *styling*, which is related to the use of ethnoracially-linked features toward a variety of goals in interaction. He distinguishes between a *style*, which is a delimited variety of speech that a speaker can use as a resource in practice, and *styling*, which is a creative and not-entirely group-delimited way of meaning-making (and identifying) in practice.

Coupland (2007:3) notes that stylistic analysis is, at its core, “the analysis of how style resources are put to work creatively”; while stylistic variation may be regular and predictable in some cases, it’s important to look at how people use language creatively to portray themselves and their positions – to create a persona. This is an approach that asks what is possible in the world of stylistic variation, not one that asks how stylistic variation is ordered. The notion of persona creation is related to the concept of identity work and indexicality, which are explored in more depth below.

2.2.3.3 Stylization in interaction

Whatever a group or individual’s linguistic repertoire, there is a need to understand how features associated with a language variety are used within situated speech practices. When it comes down to it, all theories that engage with the notion of intra-speaker variation are concerned with interaction, though some scholars have given interaction a more central seat at the table, so to speak. LePage and Tabouret-Keller’s (1985) *Acts of Identity* model is an example of a model that gives a central role to language in interaction. The Acts of Identity model describes cases where a speaker tries to project an identity to an interlocutor, in order to resemble groups with which they wish to be identified or to distinguish oneself from others. It describes four pre-conditions that make an Act of Identity possible: “We can only behave according to the behavioral patterns of groups we find it desirable to identify with to the extent that:

- i. we can identify the groups;
- ii. we have both adequate access to the groups and ability to analyze their behavioral patterns;
- iii. the motivation to join the groups is sufficiently powerful, and is either reinforced or reversed by feedback from the groups;
- iv. we have the ability to modify our behavior” (182).

The strengths of an Acts of Identity approach include the feature of linguistic choice in the

theory (i.e., characterization of individuals as linguistically agentive/creative), its attempts to identify practical limitations to stylistic variation, and its usefulness for linguistic work in small, often self-selected groups whose language may not correlate cleanly with broad social categories (Rickford 2011).

Another framework that appears to fall roughly within the Speaker Design approach, and that outlines the relationship between stylization and identity formation, is the *Identity and Interaction* framework (Bucholtz and Hall 2005, Bucholtz 2009). Identity and Interaction is a framework for the analysis of identity as constituted in linguistic interaction, and is described using five broad principles – the emergence principle, positionality principle, indexicality principle, relationality principle, and partialness principle – described in turn below:

1. Identity is best viewed as the emergent product rather than the pre-existing source of linguistic and other semiotic practices and therefore as fundamentally a social and cultural phenomenon...
2. Identities encompass (a) macro-level demographic categories; (b) local, ethnographically specific cultural positions; and (c) temporary and interactionally specific stances and participant roles...
3. Identity relations emerge in interaction through several related indexical processes, including: (a) overt mention of identity categories and labels; (b) implicatures and presuppositions regarding one's own or others' identity position; (c) displayed evaluative and epistemic orientations to ongoing talk, as well as interactional footings and participant roles; and (d) the use of linguistic structures and systems that are ideologically associated with specific personas and groups...
4. Identities are intersubjectively constructed through several, often overlapping, complementary relations, including similarity/difference, genuineness/artifice, and authority /delegitimacy...
5. Any given construction of identity may be in part deliberate and intentional, in part habitual and hence often less than fully conscious, in part an outcome of interactional negotiation and contestation, in part an outcome of others' perceptions and representations, and in part an effect of larger ideological processes and material structures that may become relevant to interaction. It is therefore constantly shifting both

as interaction unfolds and across discourse contexts. (Bucholtz & Hall 2005, 588-606)

The Identity in Interaction approach, then, echoes Speaker Design approaches in respect to the multivariate nature of the construction of a persona/social image/identity, the co-construction of style that emerges from interaction between speakers, and the associations between macrosocial categories and language use as a potential source, but not necessarily end-product, of linguistic meaning-making in interaction.

Another approach to style construction in interaction can be found in Miller (2013), which gives an overview of *positioning theory*. Positioning theory was formulated as a way to investigate how the self is constructed through discursive interaction. Miller (2013) also goes into some depth about the specific work that narratives do:

In producing narratives, we do not merely represent past experiences, but we shape them in the telling, choosing (often unconsciously) to foreground some events over others, to treat some characters as agents of actions or others as victims of actions, and/or to construct causality for actions through sequencing our utterances in a particular way (Miller 2011). Bamberg (2005) foregrounds the fact that narratives-in-interaction are inevitably co-constructed accounts as tellers ongoingly calibrate the production of their narratives in response to their hearers' utterances. More importantly, in relation to the specific focus of this paper, Bamberg notes that even when narratives do not directly treat the narrator as a character in the story-world accounts, they still serve to position narrators as particular kinds of people, with particular identities. (77)

In these three frameworks, it is clear that when we look at intra-speaker variation within the context of an interaction, a speaker is attempting to say something about the persona they are intending to convey in that moment. (Notably, all three frameworks also give identity a central role in their formulations. I examine the relationship between stylistic variation and identity in §2.5 below.) Often, when looking at the linguistic choices a speaker makes, it is not enough to say that a speaker identifies as an African American, or as middle-class, or as an urban Seattle speaker; instead, we need to consider the narrative that speakers are constructing in the moment and the goals and difficulties a speaker has in crafting that narrative.

2.3 METAPHORICAL STYLE SHIFTS

2.3.1 *Types of stylistic shifting*

To categorize types of intra-speaker variation, Rickford (2014) draws on terminology from Blom and Gumperz (1972), and provides examples that distinguish style shifts that are *Situational* (primarily due to relationships between interlocutors) from those that are *Metaphorical* (primarily reflecting shifts in topic or stance), and style shifts that are *Orchestrated* (investigator initiated) from those that are *Serendipitous* (observed rather than initiated). At times, the varied types of style shifts occur alongside each other; as an example, Rickford (2014) playfully characterizes Sharma and Rampton's (2011) corpus of British-born speakers from the Punjabi London community as an example of "Orchestrated Serendipitous Situational and Metaphorical Switching", due to the especially rich and varied style shifting found in this corpus. This mouthful reflects the complexity inherent in negotiating multiple identities in interaction, and the co-occurrence of situational and agentive style shifts. Similarly, methodologically, identifying Metaphorical shifts in action is no easy task; a single use of a Metaphorical shift may be sufficient within an interactional context to signal an intended stance, and we do not expect that there is a one-to-one correspondence between a stance and the occurrence of a particular variant. However, if we are able to identify instances of style-shifting that are compellingly described as Metaphorical, we can come to a better understanding of the meaning of those linguistic variants in context.

In reading through the various literature on style shifting, Situational shifting is associated in my mind with studies of individual styles, while studies of styling seem to overlap strongly with studies of Metaphorical shift. Within this paradigm, initiative, agentive, or creative shifts fall mainly under the category of Metaphorical shifts, and a speaker uses Metaphorical shifting in order to portray a persona that is not entirely isometric with shifts that would be expected based on macrosocial factors (such as ethnicity, gender, or social class) alone.

2.3.2 *Conversational narratives, cohesion, and the need for analytic induction*

Within the field of conversational analysis, it is understood that successful natural conversations require speakers to be responsible for some level of discourse coherence (Warren 2006), but interactional factors may influence how individuals present themselves from moment to moment:

“Schegloff (1987, 1991, 1992b) points out that there are indefinitely many aspects of context potentially available for any interaction: we may categorize one another on the basis of gender, age, social class, education, occupation, income, race, and so on, and we may understand the setting of our interaction accordingly. In the momentary unfolding of interaction, Schegloff argues, ‘the parties, singly and together, select and display in their conduct which of the indefinitely many aspects of context they are making relevant, or are invoking, for the immediate moment’ (1987: 219)” (Peräkylä 2011, p. 372).

This “momentary unfolding” implies the possibility that the particulars of interaction might be orderly only at the level of the singular occurrence, and not necessarily orderly at the aggregate level.

To further complicate matters, the extent to which Metaphorical shifts apply to single variables versus whole linguistic lects is not clear. Does a variant co-occur only with associated linguistic forms (as in cases of code-switching), or is its use more flexible and unbounded? A few non-AAL studies have addressed this question. Eckert (2008a) shows that the social meanings of some Chicano English and Anglo English features are co-constructed through identity work in mixed communities. Eckert’s (2008b) concept of ‘indexical field’ – whereby speakers use linguistic variables with locally-defined, fluid, and constellational social meanings, any of which can be activated in production – allows for intra-speaker variation at the level of the variable across ethnolectal boundaries. In a study of Brazilian Portuguese, Guy (2013) found that some sociolectal cohesion exists, but may be weaker and more multidimensional than previously assumed.

For this reason, even a detailed account of the most frequent or highest-propensity linguistic forms may not give us a full understanding of how linguistic forms associated with AAL are

used in practice. Rather, there is a need to take a detailed look at salient yet low-frequency use of style shifting to identify the social meaning of linguistic variables associated with AAL (Snell 2010, Rickford 2014). Rather than describe relatively consistent patterns of variation across an individual's speech, we can observe stretches of speech when language is more flexible, granular, and differentiated, and exchanges where a speaker may, in the words of Goffman (1981), "present [oneself] to [one's] listeners on a changed footing" (73). A *post-hoc* analysis taking this approach is a form of *analytic induction*; stretches of speech that do not fit the inductively constructed pattern warrant particular attention (Peräkylä 2011).

2.4 VERBAL REPERTOIRES AND SPEECH COMMUNITIES

In all three major approaches to style, studies of variation depend on the twin notions of verbal repertoire and speech communities. Gumperz (1972) is a crucial piece of scholarship, because it gives us definitions for these two important and complementary theoretical concepts in sociolinguistics. First, Gumperz defines a *speech community* as "any human aggregate characterized by regular and frequent interaction over a significant span of time and set off from other such aggregates by differences in the frequency of interaction" (137). He defines *verbal repertoires* as "the totality of linguistic forms regularly employed in the course of socially significant interaction" (137), and notes that linguistic interaction is a kind of decision making, where speakers select a way of formulating a message from an arsenal of expressions, in accordance with the meanings they wish to convey. Gumperz also discusses "co-occurrence restrictions"; depending on the speech event, co-occurrence restrictions may be quite strict, or may be relatively relaxed. Interestingly, Gumperz posits that speakers with multilingual repertoires are subject to more rigid co-occurrence rules, while monolingual varieties show a greater degree of flexibility. Gumperz examines two communities with different types of social organization – the highly socially stratified speech community in Khalapur, India, and the much more fluid class structure found in Hemnesberget. The Khalapur community shows distinct language varieties ranging from the local dialect to village Hindi to standard Hindi, and formalized conventions for their contexts of use. In contrast, speakers from Hemnesberget employ the local Norwegian dialect (Ranamål) in a broad range of informal and formal situations.

More recently, appeals to verbal repertoire have taken a more central role in descriptions of stylistic variation. Benor (2010) builds on Gumperz's idea that an individual chooses language from a repertoire of linguistic styles in accordance with the meanings they want to convey. Benor defines *ethnolinguistic repertoire* as "a fluid set of linguistic resources that members of an ethnic group may use variably as they index their ethnic identities" (160). Sharma (2011) also uses an ethnolinguistic repertoire approach to style-shifting in British Asian English.

Sharma's (2011) study includes (1) a more traditional variationist analysis (i.e., apparent-time analysis using interview data) of ethnically marked /t/ retroflexion among British-born Indians, and (2) a 'repertoire analysis' (multiple variables in multiple contexts). She establishes the second analysis as within third-wave sociolinguistic approaches (Eckert 2012). Although the variationist analysis shows gender-based differences in retroflex /t/ usage across generations, one concern with the variationist analysis is that interview data may not be sufficiently representative of the usage practices of each participant. While the variationist analysis does not show differentiation in /t/ usage between older and younger males, the repertoire analysis shows that older males use a range of intermediate styles and employ strategic use of ethnopolitical indexical meanings in interaction. Sharma argues that these older males possess bidialectal ability in Indian and British English. In contrast, younger men use a relatively consistent hybrid of Indian and British English across conversational contexts. Older women show consistent levels of Indian English variants across contexts. Younger women confine their use of Indian English variants strictly to the home, and use exclusively British English variants in other contexts. She identifies, then, two broad types of repertoire among these speakers: flexible and highly differentiated (in older men and younger women), and more fused and invariant (in older women and younger men). Using a network Diversity Index, she shows that individuals with more diverse networks display more differentiated repertoires in the study. This study, then, is similar to Bortoni-Ricardo's (1985) work on social networks, in that it associates broader networks with more variability. Sharma asserts that the different contexts of speech

should be read as a portrait of an individual's life-worlds. They...do not represent different communities of practice but broader abstractions, best thought of as a sample of

interactional worlds or situations that individuals may accrue long-term exposure to (474).

She also argues that simple accommodation and audience design theories do not adequately account for differences between individuals in their response to similar interlocutors.

The concept of ethnolinguistic repertoire is meant to circumvent the contradiction inherent in the notion of 'ethnolect': that not all group members of an ethnolect use the linguistic features that comprise the language variety. However, the notion of ethnolinguistic repertoire makes it difficult to talk about agency or Metaphorical style shifts in creating linguistic meaning, since it works from the angle that the meaning of variables is situated in the group. Also, for this study, applying this definition of ethnolinguistic repertoire to AAL is problematic, since it seems to support the idea that ethnolects like AAL are monolithic, and that different people that identify as African American choose from the same set of linguistic resources that have the same ideological meaning behind them.

A number of studies have critiqued ethnolect approaches along these lines. Eckert (2008b) firstly notes that using the term 'ethnolect' to discuss dialects of American English discounts the role of ethnicity in majority/mainstream varieties of English. She then notes that ethnolect at its core reflects language as something fixed and derived rather than fluid and constructed, and encourages consideration of linguistic forms associated with specific ethnicities as part of a discrete system indexical of ethnicity alone. She asserts that ethnically distinctive ways of speaking "have indexical values that are associated not simply with ethnicity but with [shared social practices] as well" (26). As an example, she describes how linguistic forms associated with Chicano English in two Northern California elementary schools also reflect local norms of coolness that are available to the larger community regardless of ethnic identity. Nylund (2013) looks closely at speakers' metalinguistic commentary to examine the complex relationships between ethnicity, place, and style among African American and European American residents of Washington, D.C. She takes an analysis of speakers' stylistic repertoires as a critique of the ethnolect perspective, as she sees that ethnolect perspectives to ethnoracial variation are based on the assumption that speakers within a particular social group are speakers of a bounded variety

associated with the group. Her approach to repertoire, in contrast, views a speaker's use of features as a repertoire of resources from which the speaker can draw strategically for the purpose of expressing aspects of their identity in the course of interaction. Similarly, Becker (2014) is in part a critique of ethnolect approaches to style. In particular, she notes that ethnolect approaches tend to consider ethnicity as primary in identity work, when in fact often the complex construction of ethnicity is done in combination with other macro-social aspects of identity, such as gender, age, and socioeconomic status. She asserts that conducting micro-analyses of individual speakers can help sociolinguists describe how individuals draw from a diverse repertoire to construct a multivalent identity. Becker, then, appeals to the notion of intersectionality in the description of linguistic repertoires and in the linguistic construction of individual identities.

Even among approaches to style that critique the notion of ethnolect, sociolinguists need to make a connection between the repertoire choices available to speakers and the linguistic choices they make when constructing/stylizing. Eckert (2008b) notes that “social, cultural, and linguistic resources are on the table for all to interpret, consider, and possibly use” (40-41), and that a particular resource may have indexical meaning that goes beyond its association with a particular ethnic group. The current study works from a constructivist perspective featured in approaches such as Eckert's (2008b), Nylund's (2013), and Becker's (2014) – namely, that in some communities, particularly in those comprised of ethnically and linguistically diverse peoples, repertoire choices need to be examined not only in relation to associated ethnic meanings but also according to more local, dynamic, and interactional meaning-making processes.

Blake (2014), drawing on Coupland (2003), makes another point relevant to ethnicity and variation. She makes the important distinction between two approaches, the *community-as-demography* approach and the *community-as-value* approach. In the *community-as-demography* approach, a speech community is identified on the basis of a demographic code, such as speaker ethnicity, and “is treated as any site of sociolinguistic engagement where some defined but weakly theorized social group has been identified” (Coupland, 2003; 101). Using such an approach, a researcher might group together the speech of a set of African American speakers for analysis, without consideration of how that group constitutes a community from a social or

psychosocial perspective. Coupland argues that the community-as-demography approach has dominated variationist sociolinguistics, and Blake (2014) makes the case that AAL is often studied through community-as-demography. The community-as-value approach, on the other hand, requires researchers to identify communities for analysis that are culturally relevant to the group under study, and that reflect something about the way individuals perceive groups of people and how they operate in relation to those groups. Relevant values, for the purpose of a community-as-value, are usually some aspect of subjective commonality, and are relevant to how people experience their lives together. Blake (2014) argues that sociolinguistic scholars interested in AAL need to look beyond the ethnoracial categories as defined in the national imagination, and to consider the social, historical, and economic conditions that unite and distinguish communities of speakers in practice.

2.5 RELATIONSHIP BETWEEN STYLE AND IDENTITY

The concept of *identity* is often alluded to or overtly referenced in discussions of intra-speaker variation. Kroskrity (1999) defines language-based identity as “the linguistic construction of membership in one or more social groups or categories” (111). However, several scholars have operationalized identity as encompassing more than just membership in broad social groups. Tracy and Robles (2013) outlines four broad types of identity, based on continua ranging from stable to dynamic and social to personal aspects of identity: *master identities*, which are relatively stable and unchanging, such as gender, ethnicity, age, and national/regional origin; *personal identities*, which are also stable but are more personal, such as personality, attitudes, and character; *relational identities*, which are enacted with conversational partners in specific situations, such as closeness or distance; and *interactional identities*, which are role-related and situation-specific, such as one’s identity as a ‘wife’, ‘friend’, or ‘co-worker’. These four aspects of identity can be overlapping or interrelated, and inform each other. For instance, in an individual’s mind, a ‘wife’ identity may be informed by (or considered in opposition to) conventional notions of ‘female’ master identity, and in many relationships, the role of ‘wife’ is defined to some extent by notions of closeness. From a social psychological perspective, Ashmore et al. (2004) identify multiple affective facets of identity that an individual can express beyond simple self-categorization, including evaluation, importance, attachment, a sense of

interdependence, social embeddedness, behavioral involvement, content and meaning. Kroskrity (1999) invokes the notion of intersectionality when stating that “individuals, as social actors, experience the multiplicity and interactivity of these levels, in their repertoires of identity” (112).

Just as the notion of membership can be somewhat hard to define itself, a few of the approaches to identity already mentioned frame identity in terms somewhat different from membership. Identity can be framed as social positioning (Bucholtz and Hall 2005, Miller 2013), which may be intentional or habitual. Similarly, Gumperz & Gumperz (2007) emphasize the role of narrative construction in portrayal of identity:

We present a stable social self by providing internally consistent narratives about our selves and our actions in a changing world... Treating identity as a communicated phenomenon allows for the possibility of multiple and flexible, inherently contingent selves that have coherence only from specific points of view and in specific contexts (478).

In other words, identity is a view about one’s self that is stylized in communication. This interactional, contextual definition of identity is not very different from Coupland’s conceptualization of persona creation. Broadly speaking, it seems the current scholarly consensus is that identities are not discrete but intersectional, and that understanding an individual’s style shifts may require an in-depth analysis of geographical, historical, socio-political and personal contexts in which the individual lives and has lived (Noels 2014), as well as an informed understanding of the individual’s interactional needs and intentions.

2.6 INDEXICALITY AND THE SOCIAL MEANING OF LINGUISTIC VARIABLES

Alongside identity considerations, the social meaning of linguistic variables can be framed in terms of indexicality. The concept of indexicality in academic research is rich – much has been written about it (e.g., Ochs 1992, Silverstein 2003, Eckert 2000, Johnstone and Kiesling 2008, Moore and Podesva 2009). The meaningful links between a linguistic feature and a social feature are called *indexical links*, and linguistic forms are said to index particular kinds of features found

in cultures large and small. Under the Audience Design framework, linguistic forms' associational meanings are drawn from associations to social groups; but in more recent research, indexical meaning has been shown to be potentially more complex, and possibly derived from individuals, behaviors, and types of talk. Eckert (2008) argues that linguistic variables do not have static meanings, and that the meanings of linguistic variables become more specific depending on the social context of their utterance. She develops the notion of the *indexical field* – a “constellation of ideologically related meanings, any one of which can be activated in the situated use of the variable” (453). Under this formulation, then, one goal of linguistic description is to identify when and how speakers draw from the indexical field when using a specific linguistic feature. Preston's (2010) notion of the *attitudinal cognitorium* considers how individuals make meaning through perception of dialects rather than single linguistic features, but also assumes the multivariate and multilevel nature of indexical meaning. For instance, his article shows that features that could be thought of as Southern might be simultaneously interpreted as signaling any from a range of non-linguistic features associated with Southern-ness (including friendliness, prejudice, honesty, ignorance, and genuineness). Similarly, Johnstone and Kiesling (2008) support a *phenomenological* approach to language variation, which they describe as “attending to the multiplicity and indeterminacy of indexical relations and to how such relations arise historically and in lived experience” (5).

2.7 THE CURRENT STUDY

Each approach has its advantages in linguistic research. This dissertation uses both Audience Design and Speaker Design approaches to look side-by-side at audience effects and the dynamic portrayal of a persona. This is in line with recent approaches to sociolinguistic variation that hold that speakers vary their speech for a multitude of reasons to linguistically construct, negotiate, and elucidate facets of their selves, including situating themselves in respect to salient social groups, expressing stances towards people and thoughts, projecting character traits and personae. This study identifies the need for locally-informed analytic induction approaches to adequately describe how the social meaning of linguistic variables is reflected in intra-speaker variation. The current study maintains that individuals may reference multiple identities through style shifting in context, and, consistent with Tracy and Robles (2013), that those identities are not restricted to

associations with large-scale social groupings and also include more personal and situated identities.

The next chapter is a review of studies of style-shifting among African American speakers, and a consideration of some of the difficulties and issues inherent to studying style-shifting in AAL. Following that, Chapter 4 gives a background of Yesler Terrace, and identifies speech community and stylistic repertoire considerations specific to the community.

Chapter 3. BACKGROUND – AFRICAN AMERICAN LANGUAGE

3.1 INTRODUCTION

3.1.1 *Overview of chapter*

This chapter outlines relevant literature on AAL and describes the theoretical framework through which AAL is examined in this study. After briefly describing the difference between race and ethnicity and reviewing the terminology used in this chapter and throughout the dissertation, this chapter reviews 3 distinct approaches to AAL: AAL as a dialect or inventory of features (i.e., a code named African American English [AAE]), AAL as a set of historically related dialects, and AAL as a linguistic resource. Included in the description of each approach is the meaning of linguistic features within each approach. The chapter then reviews studies that have examined style-shifting of features associated with AAL, and identifies questions about features associated with AAL that the current study seeks to address.

3.1.2 *Race and ethnicity*

First, it is necessary to make a note on the distinction between race and ethnicity: in scholarly literature, race is commonly characterized as physical characteristics that reflect geographic ancestry and serve to distinguish populations, while ethnicity speaks to how cultural histories, attitudes towards nationhood, and language serve to distinguish populations (Bobo 2001). However, the practical distinction between race and ethnicity can be problematic, because race and ethnicity categories are social in nature and depend somewhat on interpretation. For this dissertation, I talk, for the most part, about ethnicity, since its overtures to culture, history, and language are more pertinent/topical than considerations of race.

3.1.3 *Nomenclature*

Choosing terms to use for the various ethnicities analyzed here is of course fraught. Any study that attempts to give an overview of and consolidate decades of research on African American language needs to contend with the various names that have been given to the dialect and to the

people who speak it, including ‘Nonstandard Negro English’, ‘Ebonics’, ‘African American Vernacular English’, ‘Spoken Soul’, ‘African American English’, and, most recently, ‘African American Language’. (For a more complete overview of the terms historically used to refer to African Americans, see Smitherman 1991.)

In the current study, the term African American is used, following Baugh (1999), to refer to peoples of African descent in the U.S. with roots in the American South. Following Lanehart (2015), I use the term African American Language (AAL) to refer to varieties of English spoken by African Americans, or features used by African American people in a variety of communities. In many parts of this study I refer to ‘features associated with AAL’, to emphasize both particular linguistic features’ prominence in sociolinguistic research and to argue that these features may originate in African American communities but be used more broadly outside of specifically African American enclaves. When discussing specific earlier studies, I’ll refer to this work using the terminology the authors chose. Diverging from Lanehart (2015), I use African American English (AAE) to describe a specific dialect as an object of study, as described below in §3.2.1.

Notably, this study does not take as an object of study the large population of recent African migrants to the Pacific Northwest who might be called part of the East African diaspora, even though many of the Seattle-based East African diaspora would refer to themselves as ‘Black’. However, when describing speakers’ self-ascribed ethnicity in the YT community, most of the subjects talked about ‘black ethnicity’, ‘black identity’, or ‘black culture’, and I use their wording when discussing this aspect of ethnicity and culture.

For speakers who might be characterized as, for instance, ‘white’, ‘Anglo’, or ‘Caucasian’, I use the term ‘European American’. ‘European American’ is useful, potentially, because it identifies people of European descent who were born and raised in the United States, while recognizing that speakers’ national heritage may vary. I would note that the terms ‘African American’ and ‘European American’ are not unproblematic for describing the multiplex nature of ethnic identity, but this nomenclature is common in sociolinguistic literature, and reflects both the American-ness common to these two categories and the broad cultural distinction between them.

Some research refers to varieties of AAL in contrast to more ‘mainstream’ (read: standard) varieties of English, or African American culture in contrast to more ‘mainstream’ (read: European American) cultures. I’m not entirely comfortable with this dichotomy; while there are clear indications that AAL remains a marginalized variety of English, and one hopes to characterize cultural forces at play in language accurately, I’m concerned that this characterization may minimize AAL’s actual contribution to larger linguistic trends.

Analogously, King (2016) notes that when AAL speech is framed as an investigation of African Americans’ participation in a local sound change, it ignores that African Americans may be co-creating the sound change. Nevertheless, the distinction is important, and where it is necessary to summarize previous literature on AAL, I will retain the word ‘mainstream’, and hopefully the original author’s intent.

3.2 APPROACHES TO AAL

Each of the three distinct approaches to AAL reviewed here brings with it a particular perspective on who speaks AAL, on what features (linguistic or otherwise) define AAL, and on what the use of AAL signals or means. This chapter outlines three kinds of perspectives: AAL as a relatively uniform dialect or inventory of features, AAL as a set of historically related dialects, each influenced by, yet distinct from, the local standard dialect, and AAL as a linguistic resource. These three perspectives are not mutually exclusive, but each focuses on a distinct set of features specific to AAL.

3.2.1 *AAL as a dialect or inventory of features*

Early approaches to AAL sought to identify inventories of linguistic features. The earliest approaches sought to describe AAE as rule-governed and systematic (e.g., Labov 1969, Wolfram 1970, Fasold & Wolfram 1972). This approach was a response to the description of AAE as “a collection of mistakes or deviations from Standard English” (Labov 1998, 111), and part of an effort to legitimize the dialect. Another way of describing AAE as a set of features is study of AAE as a *code* (e.g., Linnes 1998). Crucially, this early work described AAE as a dialect or code that was relatively uniform across regions:

By the ‘black English vernacular’ we mean the relatively uniform dialect spoken by the majority of black young in most parts of the United States today, especially in the inner city areas of New York, Boston, Detroit, Philadelphia, Washington, Cleveland, Chicago, St. Louis, San Francisco, Los Angeles, and other urban centers. It is also spoken in most rural areas and used in the casual, intimate speech of many adults. (Labov 1972: xiii)

Within this paradigm, the features listed in Table 3.1 are considered to be in the inventory of AAL.

Table 3.1. Common phonological, morphological, and prosodic features of AAE (cf. Thomas 2007, Rickford 1999, Rahman 2008, Green 2002, Labov et al. 2006)

Feature	Examples
<i>Phonological</i>	
Consonant cluster simplification	‘send’ [sɛn], ‘passed’ [pæs], ‘act’ [æk]
/l/ vocalization/deletion in coda position	‘old’ [ɔd], ‘feel’ [fiə]
Fortition of interdental fricatives	‘this’ [dɪs], ‘brother’ [bɪ.ɹv.ɹ]
Merger of [ɪ] and [ɛ] before nasals	‘pen/pin’ [pɪn]
/r/ vocalization/deletion	‘hard’ [hɑ:d], ‘four’ [fo:] [foə], ‘sister’ [sɪstɹ]
Monophthongal [e], [o], [ɔ]	‘face’ [fe:s], ‘goat’ [go:t], ‘thought’ [θɔt]
/aɪ/ reduction	‘price’ [pɪɑ:s], ‘fire’ [fɪɹ]
Merged vowels before [l]	‘heel/hill’ [hil] ‘pool/pull’ [pul]
Devoicing of word-final voiced stops	‘bad’ [bæt] or [bæʔ], ‘pig’ [pɪk]
<i>Morphological</i>	
Invariant <i>be</i>	‘We be cold all the time’
Copula deletion	‘We Ø cold right now’, ‘They Ø running’
Third person singular -s absence	‘He think he look cool’
<i>Ain’t</i> in place of <i>didn’t</i>	‘He ain’t do it’
Habitual <i>be</i>	‘He be at the store’ (He is usually at the store)
Stressed BIN	‘He BIN wrote a letter’ (He wrote the letter a long time ago)
Completive <i>done</i>	‘He done did his homework’
Existential <i>it</i>	‘It’s a fly in my soup’
Possessive <i>they</i>	‘This is they house’
Negative concord	‘Can’t nobody make none’
<i>Prosodic</i>	
Intonational range	cf. Tarone (1973), Podesva (2007)
Pitch accent	cf. McLarty (2011, 2013), Holliday (2016)
Prosodic rhythm	cf. Thomas & Carter (2006), Nielsen (2012)
Falsetto phonation	cf. Podesva (2007), Nielsen (2012)

One recent approach to AAE as a dialect or inventory of features is the Atlas of North American English (ANAE; Labov, Ash, and Boberg 2006). The ANAE is not a sociolinguistic investigation, but it does include a broad overview of patterns in English spoken by African Americans in the U.S., in relation to several sound changes in progress in varieties of American English. While Labov et al. (2006) do refer to a continuum between ‘standard African American English’ to African American Vernacular English, they maintain that AAE is relatively uniform across the U.S, and characterize it as a 4th dialect that is resistant to many sound change shifts, but at the forefront of some mergers in progress (*pin-pen* and merger of high vowels before [l]). The *pro uniformity* perspective has implications for the social meaning of linguistic variants associated with AAE. Historically in sociolinguistics, the study of AAE was closely tied to vernacular culture, and street culture specifically; Labov (1973) noted, “it appears that the consistency of certain grammatical rules is a fine-grained index of membership in the street culture” (81). While the study of AAE has expanded quite a bit beyond investigation of language among urban lower-class males deeply embedded in street culture, at its most basic, the *pro uniformity* perspective implies that greater use of AAE variants equates with deeper embedding in the African American community, and emphasizes differentiation from MUSE.

There are distinct advantages to investigating AAE as an inventory of features. This approach allowed linguists to provide a counterargument to the ‘deficit model’ and ‘correctionist approach’, prevalent in the 1960s, which maintained that AAE is merely an unsystematic approximation of Standard English; ask questions about the origin of AAE (discussed in Rickford 1999); study whether AAE and European English vernaculars are diverging or converging (e.g., in Wolfram and Thomas 2002, Yaeger-Dror & Purnell 2010, Labov 2010); study longitudinal changes in the use of AAE across childhood (Van Hofwegen & Wolfram 2010); and utilize a feature set as a clear reference point in applied language studies in education (e.g., Craig & Washington 2006, Renn & Terry 2009).

Descriptions of AAE as a uniform linguistic variety were often based on the study of urban, working-class, and predominantly male African Americans, and the early study of AAE was largely limited to working-class males in northern US cities. This led to criticism that the

description of AAE as a uniform supralocal dialect overemphasizes the similarities in the ways various African American communities spoke, and did not reflect the full diversity of people who identify as African American. Wolfram argues that this kind of essentialism in sociolinguistics is not limited to AAE, but the characterization of AAE as a uniform dialect is a pervasive myth in sociolinguistic research that may marginalize or frame as inauthentic speakers whose language does not match the most vernacular instantiation. More problematic is the deterministic evaluation of features associated with AAL as denoting some relationship with African American identity. Several sociolinguists have already problematized the notion of a one-to-one relationship between the use of AAE and African American ethnicity (Weldon, 2004; Wolfram & Kendall, 2009; Thomas & Wassink, 2010).

3.2.2 *Expanding the dialect/inventory approach*

In recent years, the formulation of AAE as a variety closely related to the vernacular speech of working class, urban African Americans has given way to a more inclusive definition of the variety - taking into account the speech of a range of individuals who self-identify as African American, and exploring the ways the dialect varies across region, class, and gender (Thomas 2007, Yaeger-Dror & Thomas 2010). This *contra uniformity* perspective is exemplified by Wolfram (2007), which states that AAE is not a single, geographically uniform dialect, but is instead a set of historically related dialects, each influenced by, yet distinct from, the local standard dialect.

An early nod to the variety in vernacular dialects among African Americans can be found in Taylor (1971), where he describes a variety of English spoken by African Americans of the middle and upper classes, characterized by relative absence of grammatical features of AAVE, but sharing many of the phonological features. Taylor (1971) called this variety Black Standard English (BSE). More recently, Weldon (2004) looked at the intersection of class and ethnicity, by examining the speech of prominent public figures at the 2004 State of the Black Union (SBU), a live televised symposium for black leaders to discuss issues relevant to the black community. She found that the speakers used a greater range of phonological AAL features than grammatical AAL features, and that speakers also drew from a number of rhetorical strategies associated with the larger African American community.

Differences in the use of AAL features can be described in some cases by examining social networks of African American speakers. Ash and Myhill (1986) argued that African Americans' linguistic behavior can partly be understood in terms of the strength of their social ties with European Americans, and thus can be described in terms of linguistic distance or assimilation towards white-majority regional dialect features. Additionally, a number of scholars have expanded the study of AAL features to the speech of individuals who are not ethnically African American. Notably, Fix (2014) considers the use of features classically associated with AAE by adult white women with extensive social ties to African Americans in minority-white communities in Columbus, Ohio. Her work examines the reasons women who belong to the dominant ethnic group would adopt features associated with a non-dominant ethnic group. While the linguistic outcomes of contact between ethnic groups has been studied, her work builds on the findings of Ash & Myhill (1986) by accounting for differences in patterns of linguistic variation based on differences in ethnic alignment and cultural practices among White speakers who have significant ties with African Americans. She finds a correlation between language use and material style practices (such as styles of dress, accessorizing, hairstyling, music preferences, and home décor style) that reflect an identification with Black/African American culture. Significant ties could be based on relationships (e.g., marriages and partnerships, friendships) or social/institutional affiliations (e.g., church attendance). Fix calculated an African American Network Strength Score (AANSS), ranging from 0 to 1, which quantifies a speaker's relationships, social contacts, material style, and social practices to provide an index which reflects the degree to which an individual participates in African American culture, and averaging network strength over youth, adolescence, and adult life stages. Fix took a close look at /l/ vocalization in her sample, which is documented in the speech of Whites in the Columbus region but at lower rates than for African Americans in the region, and which varies according to class and urbanity as well as by ethnicity. Fix found strong correlations between overall levels of /l/ vocalization and AANSS scores. Cultural appropriation of AAL forms by non-African American young adults may also be based on consumption of products in African American culture rather than as an outcome of prolonged and meaningful contact between ethnic groups (Bucholtz 1999, Cutler 1999).

Many features of AAVE are also commonly found in other regionalized or socially stratified varieties of English. For instance, because of the history of African American slavery in the American South, features of AAL and Southern white vernacular speech overlap to a great extent, both in use and in ideological association (Wolfram and Schilling-Estes 2006). With this regional variation in mind, much of the research specific to this 2nd approach has examined and documented how use of AAL features varies across regions of the United States, and how local varieties of AAL are influenced by the local standard dialect (e.g., Purnell & Yaeger-Dror 2010).

In some circles it has become popular to explain AAE as an ethnolinguistic repertoire (Gumperz 1964, Benor 2010), as a way of being more inclusive, as a nod to the diverse swath of people who self-identify as African American, yet speak in ways demonstrably different from other subsets of African Americans (e.g., Becker 2011, Grieser 2014). Under this approach, individuals who identify as African American can draw upon a range of variables associated with AAE to index their ethnicity in conversation. However, Becker (2014) identifies some of the problems inherent in applying an ethnolinguistic repertoire approach to AAL. Her (2014) study demonstrates that speakers can use features that are not seen as characteristically ethnolinguistic in order to construct or style a broader identity. She points to the intersectionality of identity to bolster her argument, and notes that ethnicity isn't always a central aspect of an African American's identity, nor are all African Americans oriented to African American identity in the same way.

Additionally, describing AAE as a dialect, even as a wide-ranging dialect with a variety of repertoire choices for speakers, comes at the cost of understanding how 1) the social meaning of features associated with AAE beyond the association with African American ethnicity, and 2) the extent to which AAL-related linguistic features work in interaction or individually. While there is, speaking roughly and broadly, general consensus about the phonological, morphological, and syntactic features of AAL as a whole, the use of regular AAL features is not limited to African American speech or emblematic of an African American identity. Many of the studies reviewed later in this chapter (see §3.3) show that features associated with AAL could be indexing any number of things other than ethnicity, such as features of interlocutor, other identities, and other stances/ideologies. So, understanding the social meaning of linguistic variables associated with

AAL is important, because often these features have a large set of ideological and functional meanings, of which African American-ness is just one. We know a lot, comparatively, about regional differences in the use of features associated with AAL, but we know less about how AAL features operate in various interactions and situations – that is, we’re not as clear on *why* AAL features pattern the way they do among, say, middle-class African American speakers, or speakers across regions of the US. However, recent studies that examine AAL as a linguistic resource are beginning to answer this question through close study of how features associated with AAL are used in interaction.

3.2.3 *AAL as a linguistic resource*

The third type of sociolinguistic approach to AAL can be found in studies that regard features associated with AAL as linguistic resources. The concept of a linguistic resource is based on the notion that linguistic features are imbued with social meanings through their associations with social groups or character types, and furthermore that speakers can draw upon these resources creatively to create distinct and unique identities, styles, and personae (Coupland 2007, Zhang 2008). Considering features associated with AAL as linguistic resources with potential for being used by people with access to those resources means that we are able to examine the social forces and socio-psychological factors that motivate their use in some detail and nuance, understand the meaning potential for these resources, and explore how social meaning is constructed in practice. Crucially, examining features associated with AAL as linguistic resources requires understanding the social history of those features (Zhang 2008).

There are a few features found widely in studies that consider AAL as a linguistic resource: 1) many focus on the speech of middle- and higher-class African Americans; 2) many are case studies, looking closely at the language of a single speaker in some depth; and 3) most take intra-speaker variation into account. Throughout this section, I argue that this approach has much in common with Speaker Design approaches to linguistic variation (see §2).

A number of studies within this framework have focused on the language of middle-class or higher African Americans (Hay et al. 1999, Weldon 2004, Britt 2011, Scanlon & Wassink 2010a, Podesva et al. 2012). Notably, many of these studies examine language use in public

settings (e.g., TV appearances). As noted in §3.2.2, several studies have emphasized major differences between working-class and middle-class use of AAE variants. By taking a closer look at middle-class African American speakers, researchers have come to a better understanding of the rich and nuanced use of variables associated with AAL within this population, and have addressed the fundamental yet complex question of what it is to be and act African American (e.g., Britt & Weldon 2015).

Many studies examining AAL as a linguistic resource have been case studies (Rickford & McNair-Knox 1994, Hay et al. 1999, Schilling-Estes 2004, Weldon 2004, Scanlon & Wassink 2010a, Britt 2011, Podesva et al. 2012, Grieser 2014, Nielsen 2012, Rickford & Price 2013, Becker 2014, King 2016). Speaker design studies have crucially used case studies, because the Speaker Design framework acknowledges that individuals may have different approaches to utilizing the resources found in the communities with which they engage. Crucially, in a Speaker Design approach, intra-speaker variation is conceived as a phenomenon that occurs where the individual and the communal intersect and that the two entities relate to and influence each other (Schilling-Estes 2013), so it is important to examine how individuals approach linguistic meaning-making in unfolding talk rather than aggregating statistics from multiple speakers or multiple stretches of talk.

Lastly, many studies where AAL is considered as a linguistic resource deal directly with stylistic variation. While perception studies (such as subjective reaction tests as found in Rahman 2008) can also yield insight into the meanings speakers ascribe to linguistic forms, for production studies the clearest indication that a speaker is utilizing a particular linguistic resource is a stylistic shift in a variable's use. Within a Speaker Design framework, temporary and interactionally specific linguistic moves are as important as linguistic moves reflecting macro-level demographic categories or those signaling local, ethnographically specific cultural positions, when it comes to describing the social meaning of linguistic variables. In fact, it is necessary to look at speech within and across individuals in order to distinguish between these three kinds of linguistic meaning-making.

How can we think about the social meaning of linguistic variables associated with AAL within this approach? One example can be found in Rahman (2008). Rahman outlines a dilemma she sees as inherent to the use of variables associated with AAL: for middle class African American speakers, the use of features associated with AAL can be perceived alternately as a symbol of ethnic solidarity and a focus of discrimination in mainstream society. Conversely, the use of more mainstream linguistic features may be useful for socioeconomic advancement, but their use within the African American community may appear incongruent or arouse suspicion. Rahman (2008) characterizes variable use of AAL in the speech of middle-class African Americans as a type of linguistic diplomacy. She asserts that middle class African Americans, who typically inhabit diverse social roles, experience an ambivalence towards the conflicting social norms, and selectively draw on varied sets of linguistic resources that are informed by their varied social roles. In practice, these linguistic resources help them project a range of attitudes, stances, and social affiliations that help them achieve their goals. Within the framework of this explanation, features associated with AAL are utilized to index identification and affiliation with the African American community, but the meaning of these variables is also related to social class and contextual appropriateness. This approach is similar to the ‘codes and consequences’/‘rights and obligations’ approach found in Myer-Scotton (1998), and in Smitherman’s (2006) assertion that African Americans style shift in order not to ‘rock the boat’, or in order to negotiate the ‘linguistic push-pull’ felt by individuals who straddle African American and mainstream American communities. The notion of features associated with AAL as a resource, then, is based on the idea that speakers (consciously or subconsciously) assess and negotiate their context through deliberate, meaningful use of language. However, the consideration of AAL as a linguistic resource allows researchers to consider that use of AAL features is not necessarily meant to convey self-identification with African American culture, but can potentially be used for a wider variety of identity work and stance signaling. Scanlon & Wassink (2010a) argue, further, that studies that seek to reliably test for stylistic shifts related to ethnic identity need to account for other possible explanations for observed shifts. In the current study, I hope to contribute to the growing body of research that describes the wider variety of language work done with features associated with AAL.

3.3 STUDIES OF STYLISTIC VARIATION IN AAL

This section discusses AAL studies that have investigated stylistic variation. It organizes them by the effect the authors describe (e.g., formality of speech, interlocutor effects, etc.).

3.3.1 *Effect of formality*

Work from early in the history of sociolinguistics showed robust speech differences based on the formality of the situation a speaker found themselves in. For example, within urban Black communities, youth tended to use variants associated with AAL less in reading styles than in conversational styles, and still less for word list and minimal pair tasks (Labov 1973). This broad relationship between features associated with AAL and formality of situation has been confirmed for some features in more recent studies as well. African American speakers use more AAL features in informal than in formal peer contexts (Renn & Terry, 2009), and a case study of the speech of Condoleezza Rice showed that the prominent African American political figure used some features associated with AAL more in a public speech than in the corresponding Q&A session (Podesva et al. 2012).

3.3.2 *Audience/referee design*

Baugh (1979) identifies a few interactional factors that may influence a speaker's use of AAL features. Baugh described style shifting among 9 adult BEV speakers in four different context types: 1) Familiar/Vernacular, speech events among familiars who speak AAVE, 2) Unfamiliar/Vernacular, speech events among non-familiars who speak AAVE, 3) Familiar/Nonvernacular, speech events among familiars who do not share AAVE, and 4) Unfamiliar/Nonvernacular, speech events among participants who neither know each other nor speak AAVE. He found that post-vocalic *r*-deletion, absence of third-person singular *-s*, possessive *-s*, and plural *-s* were subject to style shifting, while many other variables (*be* done, stressed *BIN*, aspectual marking with *steady*, multiple negation, *is*-absence, *are*-absence, final *t/d* deletion) were not.

Rickford & McNair-Knox (1994) examined addressee- and topic-influenced style shift of several morphosyntactic variables in the speech of Foxy Boston, a teenaged African American woman in

East Palo Alto, California. Rickford and McNair-Knox found differences in Foxy's speech based on her interviewer. Firstly, this was interesting because to that point, it was not clear even whether these variables are subject to style-shifting. However, as the interviewers varied in both ethnicity, language patterning, and familiarity to Foxy, it was not clear whether and to what extent she was responding to each of these differences. The African American interviewer knew Foxy, and her daughter, who was close to Foxy's age, was present for the interview. The White interviewer was a stranger who conducted a one-on-one interview, and Rickford & McNair-Knox note that Foxy's manner tended to be less animated or excited in this interview. Rickford & McNair-Knox find that Foxy varies her production of third singular present *-s* absence, copula *is/are* absence, and invariant habitual *be* across interviews, but her use of possessive *-s* absence and plural *-s* absence is similar across interviews. Table 3.2 shows percentages of vernacular forms in each interview, and provides examples of each kind of variable studied.

Table 3.2. Foxy's vernacular usage in two interviews, adapted from Rickford & McNair-Knox (1994)

Variable	African American interviewer	White interviewer	Chi-square results
Possessive <i>-s</i> absence <i>e.g.</i> , "the teacher \emptyset clerk"	67% (6/9)	50% (5/10)	N.S.
Plural <i>-s</i> absence <i>e.g.</i> , "They just our friend \emptyset "	01% (4/282)	0% (0/230)	N.S.
Third singular present <i>-s</i> absence <i>e.g.</i> , "At first it seem \emptyset like it wasn't no drugs"	73% (83/114)	36% (45/124)	$p < .001$
Copula <i>is/are</i> absence <i>e.g.</i> , "He \emptyset on the phone"	70% (197/283)	40% (70/176)	$p < .001$
Invariant habitual <i>be</i> <i>e.g.</i> , "He always be coming down here"	385 (=241 per hour)	97 (=78 per hour)	$p < .001$

Cukor-Avila and Bailey (2001) attempted to replicate Rickford and McNair-Knox's study, but attempted to sort out the effects of familiarity, presence of peers, and race of interviewer. They found, in contrast with Rickford and McNair-Knox (1994), that none of their three teenaged informants from Springville, Texas seemed to shift away from vernacular norms in the presence of white interviewers. However, Cukor-Avila and Bailey's interviewers had varying experience with fieldwork; the whites interviewers were experienced sociolinguistic fieldworkers who had

been working at the linguistic site for over ten years, while the African American fieldworkers were new to the job and the location. This suggests that experience and time spent in the community are important factors for interviewers as well. However, Cukor-Avila and Bailey do not discuss in much depth how factors such as experience and history in the community play out at the interactional level.

Hay et al. (1999) examined Oprah Winfrey's variable use of /ay/ on her daytime talk show, and found that both lexical frequency (number of times a particular word appears in the corpus) and ethnicity of referee (an absent party about whom Winfrey is talking) influenced the phonetic realization of /ay/. This study is an example of referee design, part of the audience design framework. They found that Winfrey used proportionally more monophthongal /ay/ with African American referees than with non-African American referees, and that this effect was independent of lexical frequency effects.

Scanlon & Wassink (2010a) is a case study of an African American speaker from Seattle, Washington, with deep network connections to both African American and European American speakers. It examined stylistic shifts in ay-monophthongization and pin-pen merger as she interviews members of her community. The speaker showed quantitative changes in her use of these core AAL features based on interlocutor characteristics (interlocutor ethnicity, familiarity, and speech patterns).

3.3.3 *Complex multivalent identity*

Ethnicity is just one aspect of identity, and a number of studies have shown that features associated with AAL can be used to signal other aspects of personal identity. In a few recent studies, AAL features have been shown to signal associations with aspects of identity that are somewhat distinct from yet related to ethnic identity, including identity based on geographical place, socioeconomic class, political affiliations, and personal qualities. Becker (2014) is a clear example of a recent study where AAL is considered as a linguistic resource that is utilized to some extent separately from its ideological association with African American culture. At the same time, this study emphasizes the difficulty in characterizing some instances of language use as either regionally-based or ethnicity-based. Becker looks closely at the speech of 'Lisa,' an

African American speaker from New York's Lower East Side who self-identifies as a brown person, with family from the South. Her self-identified identity draws from several different levels of identity; over the course of her sociolinguistic interview, she identifies as someone whose identity is tied to place, i.e., "old school" Lower East Side identity (i.e., local, working- or middle-class rather than gentrified, authentic rather than faux), and she discusses not only which categories she sees herself as fitting in but also her feelings about or orientation to those categories; in her sociolinguistic interview, she talks about her changing socioeconomic status and her anti-gentrification stance. Individually and averaged over the course of her interview, Lisa's speech is similar to that of speakers from other studies of AAL. Yet by doing a close reading of the interview, Becker shows that Lisa is drawing from a multitude of identities, including African American-ness, in order to convey a *complex multivalent identity* according to her stance needs in interaction. AAL features are used to reflect aspects of identity that aren't necessarily about her being African American. Shifts in her use of BOUGHT raising (an NYC-local feature) to reflect changes in solidarity with a referent in a narrative, and her use of this feature could simultaneously be described by referencing ethnicity, socioeconomic class, political stance, and personal qualities like aloofness. This microanalysis makes the point that it's difficult to talk about African Americans' use of some variables as either accommodating or not accommodating to a local white norm. Shifts in her use of non-rhoticity in the syllable coda are used to distance her from the referent in her story, and emphasize ethnic- and class-based differentiation from her referent. Similarly, King (2016) looks at how BAT-backing indexes multidimensional identities in the speech of twelve African Americans. BAT-backing is a feature associated with AAL, and has been shown to index Californian urban identity, as well as "Valley girl" identity. Like the present study, King (2016) is looking at AAL as an examination of how African Americans' draw from local resources in constructions of their identity. Most of King's article doesn't focus on intra-speaker variation, but she does look closely at the speech of a 47-year-old female speaker named Tiara. King asserts that Tiara seems to be using BAT-backing not to reflect her relationship with African American culture, but to reflect her orientation towards the Goth-Punk subculture in urban Los Angeles. Nylund (2013) conducted a 'stylistic repertoire' analysis of speakers' usage of /l/ vocalization, *-in*, and coronal stop deletion alongside each other, and conducts an analysis of the interactionally situated use of these variables. She concludes that these features serve as part of a repertoire of resources that speakers draw

strategically from in interaction in order to index not only ethnoracial, but also place identities. Grieser (2014) examined intra-speaker variation in the speech of African Americans from Takoma, Washington, D.C. She argues for style shifting as a way of indexing not racial identity but in-group status in the neighborhood community (and links to personal characteristics associated with the community) of Takoma neighborhood of Washington, D.C.

Speakers can make selective use of AAL features to signal a complex persona. While not primarily a study of style shift, Podesva et al. (2012) looks at a single speaking engagement of Condoleezza Rice, comprising both a speech and a Q&A session. Podesva et al. consider Rice's speech as indicative of a unitary style, or collection of linguistic features, indexing distinct parts of her multifaceted identity (including features of Southerner, Westerner, African American, Conservative, and Careful speech). They argue that her vocalic patterns largely de-emphasize regionally-marked features, and some features (such as release of word-final voiceless obstruents) might be interpreted as indexical of a high degree of education or her professional status.

3.3.4 *Stance and alignment*

African American speakers may vary their speech to indicate a stance (Du Bois 2007) taken toward an individual or concept, which has been argued to motivate variation at both the segmental (Podesva 2008) and suprasegmental (Nielsen 2010) level. Stance theory can be used to describe speech events in terms of their alignment with objects and people in the real world and the story world. Stance-taking involves *evaluation* of an object, *positioning* of individuals in relation to an object, and *alignment* between interlocutors. According to Du Bois' formulation, "*I evaluate something, and thereby position myself, and thereby align with you*" (2007: 163, his italics). As such, Stance Theory appears to be building off of Communication Accommodation Theory (Giles 1973, Giles et al. 1991). The studies reviewed here can be split into two distinct types: studies finding style shifts that indicate stances towards ethnic topics, and studies describing style shifts where stances are utilized to align the speaker to other salient topics or categories.

3.3.4.1 Stance towards ethnic topics

Features associated with AAL that are used to signal a stance towards ethnic topics sometimes appeal to the linguistic capital of AAL and more mainstream varieties of English. For example, Linnes (1998) describes a diglossic situation between AAVE and SAE in one community of African American speakers in Houston, where AAVE tended to be used in discussion of ‘ethnic’ topics, and SAE for ‘mainstream’ themes. To take a recent example, Holliday (2016) showed that biracial speakers who aligned themselves more with blackness utilized a L+H* pitch accent more often, and were more likely to use the L+H* pitch accent to mark narrow focus.

3.3.4.2 Stance towards non-ethnic topics

While much of Rickford & McNair-Knox’s (1994) analysis is concerned with interviewer effects, they also found shifts within Foxy’s interview in zero copula and invariant *be* (e.g., “He \emptyset on the phone” and “He always *be* coming down here”, respectively) based on interview topic. Use of vernacular variants was more common in topics where Foxy was more animated or involved (e.g., “wives vs. slamming partners”). One possible explanation for explain topic-based style shifts is that Foxy is talking as if talking to addresses associated with the topic; another explanation offered is that for topics where Foxy was more animated or involved, she made prevalent use of direct quotes. Rickford & McNair-Knox argue that Foxy “is, through extensive quotations, dramatically reenacting the speaking of teenagers” (261). This is an early example of a study where the authors assert AAL-linked linguistic features are used to index something other than ethnicity (here, adolescent social life).

Some studies have found evidence of topic-based shift in alignment with interlocutors or with real-world referents. Schilling-Estes (2004) describes topic-based shift in /r/-lessness in an interview between friends who identified, respectively, as African American and Lumbee Indian. She found that the two speakers diverged in their speech when discussing race relations, but talk about friends, family, and their shared experience in college resulted in more closely aligned speech. Nielsen (2012), a case study of one African American speaker named Michael, finds that Michael’s constructed language reflects one of three kinds of alignment with objects or people in the real world: convergent, divergent, or ambiguous. Michael’s prosody overall resembles that found in European American English, yet his prosody strategy in interaction does not necessarily

reflect already existing social categories in the larger society. Rhythmic shifts in Michael's speech can be viewed as part of a stance staking strategy that occurs in oppositional alignment with authoritative figures.

In addition to the studies of speakers conveying a complex multivalent identity (see 3.3.3 above), a number of studies note that use of features associated with AAL signals stances towards concepts and identities related to but distinct from African Americans and African American culture.

Britt (2011) is a qualitative case study looking at the speech of four prominent African Americans who spoke during the 2008 State of the Black Union (SBU), a live televised symposium for black leaders to discuss issues relevant to the black community. Britt found that 4 of the speakers who were examined utilized suprasegmental features (such as pauses, rises in intonation, added stress, vowel lengthening, and volume increases) commonly found in the speech of black preachers, though they were not speaking as ministers at the symposium. Britt identified 3 distinct styles in the SBU corpus: 'doing symposium', 'doing conversation', and 'doing church'. Choices to employ a black preacher style in public discourse is an initiative shift that highlights or makes salient the values the speaker is referencing and the relationships that speaker forges in interaction. Britt describes these linguistic choices as doing important linguistic work within the context of the symposium – specifically, calling on the sacred-secular dimension of black oral culture (Smitherman 2000), invoking response and feedback from the audience, and elevating the communal aspect of the discussion.

Rickford & Price (2013) is a case study showing that two speakers use considerably less of vernacular AAL variants than when they were teenagers, reflecting age-grading in the form of accommodation to mainstream linguistic norms over time. Rickford & Price attribute these linguistic changes to changed attitudes about the lifestyle the two speakers grew up with, their current responsibility as parents, and their articulated concerns to get ahead economically. So this is another case where use of forms associated with AAL doesn't necessarily reflect alignment with ethnicity, but with ethnicity-related/correlated factors.

Grieser (2014) is a case study illustrating the use of style shifting as a way of indexing not racial identity but in-group status in the neighborhood community, and links to personal characteristics associated with the community of Takoma neighborhood of Washington, D.C. Their language use reinforces the characterization of Tokoma as a racially-neutral, integrated space. Her female speaker uses topically-localized th-stopping (fortition of interdental fricatives) while talking about gentrification and white infill (Piiparinen 2013) of the neighborhood. Her male speaker uses variation in th-stopping in the course of constructed dialogue to distance himself from a panhandler he characterizes as lazy. Grieser asserts that Takoma, to its residents, is a race-neutral place, or at least that community membership is more salient than ethnic makeup within the community and within discourses about the community. This is an example, then, of how ethnicity is relatively distinct from use of features associated with AAL. Scanlon & Wassink (2010a), described in §3.3.2 above, similarly considers community membership as an important factor for speech production, and makes a distinction between the use of AAL features within a particular community and their use to signal ethnicity. In addition to finding audience- and referee-design-based shifts, the authors argue that the speaker's use of features associated with AAL, and her alignment with her interlocutors, supports the broad communicative goals of her interactions (successfully relating shared story, building solidarity, and ideological stance-taking).

3.3.5 *Individual differences*

Some scholars have noted that, there are sometimes individual differences in just how much an speaker style shifts, rather than a function of or reflection of in-group status or authenticity as community members. Weldon (2004) found that middle-class speakers show great individual differences in the way they use features associated with AAL, and that usage of features associated with AAL can fall along a continuum between usage inherent to a single system and usage reflecting a code-switching strategy. She notes that Tavis Smiley, who appeared to employ more of a code-switching strategy, used AAL features initiatively/metaphorically, in order to evoke humor or build rapport in some way with his audience. Similarly, Rickford & Price (2013) considered differences in the degree of stylistic shifting between the two speakers they observed; one was characterized as a 'perpetual chameleon', while the other was described as an 'almost single style speaker'.

Britt (2011) argued that there are individual differences in the purpose behind the use of a ‘doing church’ style. Each speaker Britt (2011) analyzes utilizes the black oral tradition in contexts where race is a significant topical element, but each uses this style for slightly different purposes:

In [Cleo] Fields’ case, preaching allows him to prime the audience for his [politically risky] reversal – his overt support for African American presidential candidate Barack Obama. In [Sheila] Jackson Lee’s case, preaching and sermonizing help package her carefully constructed identity as an African American woman who shows deep concern for and commitment to her community. Finally, [Eddie] Glaude [Jr.]’s use of preaching and probing the depths drills home his carefully structured argument about the significance of race in the twenty-first century” (228).

Fix (2014) identified a number of different individual approaches vis-à-vis alignment with African American culture by analyzing speakers’ metalinguistic commentary. Notably, one speaker said that African American culture was all they knew; another rejected the notion that individuals embedded in African American culture are supposed to dress and act a certain way; and a third speaker rejected the notion that she was ‘acting black’, and appealed to the notion of being her authentic self. Fix concluded that individuals’ use of features associated with AAL is based on both social ties within African American communities and individuals’ agency in regards to presentation of self (i.e., cultural and personal ideologies).

3.3.6 *Summary*

In summary, linguists have observed intra-speaker variation related to AAL in a number of contexts, and have identified a variety of factors motivating stylistic shift, including: formal versus informal tasks and contexts; audience/referee design factors such as familiarity with interlocutors, ethnicity of referee, ethnicity of interlocutor, and language use of interlocutor; aspects of identity related to ethnicity such as place identity, in-group neighborhood status, socioeconomic class, political affiliation; identity with overlapping local social groups; stance and alignment toward topics and addresses, including ethnicity, authority, referenced values,

political issues such as gentrification, and aspirations regarding lifestyle; and individual differences, which encompass both linguistic strategies and cultural ideologies.

3.4 SUMMARY AND REMAINING QUESTIONS

This chapter has identified three distinct approaches to African American Language, and has reviewed relevant studies showing stylistic shift and AAL. It has summarized findings related to intra-speaker variation in features associated with AAL. With a review of this work in place, we can identify a few remaining questions:

- With the exception of Grieser (2014), the function of features associated with AAL hasn't been examined extensively in local communities that are understood as multi-ethnic, or integrated. The current study looks not only at a community that is integrated, but examines the use of linguistic features within an interactional context that places the integrated community at top of mind. I assert that the social meaning of linguistic variables may co-constructed across ethnic lines in diverse communities. This approach also allows us to ask when non-African American speakers in these communities take up forms associated with AAL.
- Additionally, the current study is an attempt to understand where the individual and the communal intersect, and how the two entities relate to and influence each other. I don't think we have a very clear understanding of this intersection of ethnicity and local communities as a phenomenon, particularly for features associated with AAL. It's common to see sociolinguistic studies that consider features associated with AAL from a 'codes and consequences' framework. While there is evidence from some stylistic variation studies that features associated with AAL are used as a resource in 'codes and consequences'-type situations, there is also some work that shows that this framework is not necessarily the only consideration for speakers who have features associated with AAL as a resource in their linguistic repertoire. It appears there is an inherent conflict between the 'codes and consequences' framework and the creative, initiative use of AAL features of the type often described in Speaker Design approaches. The current study will examine how these two theoretical frameworks apply in the community at hand.

- Socioeconomic class is a complicated construct, and its measurement is particularly fraught. While the speech of working-class African Americans formed the bedrock of AAL study in sociolinguistics, and study of the speech of middle-class African Americans has gained ground in recent years, it is not clear how speakers might utilize features associated with AAL in speakers and communities that may have a more complicated relationship with socioeconomic class. The present study examines features associated with AAL among members of one such community, Yesler Terrace (YT). The community is described in detail in §4.
- Lastly, the extent to which AAL-related linguistic features work in interaction or individually is not well understood. Approaches to style shifting and AAL often either consider AAL as a code one switches into or out of, or examine individual variables associated with AAL without an eye towards the whole constellation of features. In this study, conducting analyses across a number of phonological features associated with AAL allows us to examine the extent to which these features are utilized individually or in tandem, and identify situations of Metaphorical shift where the use of features associated with AAL is more flexible and unbounded.

Chapter 4. BACKGROUND – YESLER TERRACE

4.1 INTRODUCTION

The present study investigates how features associated with AAL are used in one community in the Pacific Northwest – namely, among former residents of the Yesler Terrace housing community in Seattle, Washington. Here I outline some background characteristics of Yesler Terrace (YT), in terms of its demography, history, and context as a distinct type of community in the Pacific Northwest in the mid-twentieth century. I focus on a community of speakers that lived in YT in the mid-twentieth century, drawing from interviews with these speakers for a description of the community. I identify the ways in which this community is distinct from other communities that have been studied in sociolinguistic research, and describe the aims in studying this community. The features of the community described here also form the foundation for linguistic interactional work in the interviews. I describe the context for the interviews from which this study's data is drawn, and consider how this context may have influenced the speech of interviewees.

4.2 HISTORY

Yesler Terrace (Figure 4.1) is a public housing community established in 1940. YT is located on Yesler Hill in Seattle's Central District, and borders the areas known today as the International District and Pioneer Square. In Taylor's (2011) history of the Central District, he writes, "Black Seattle through much of the twentieth century was synonymous with the Central District" (p. 5). However, YT was not an insulated community of African-Americans. It enjoys a privileged place in America's racial history, because it is likely the first racially integrated public housing in the United States (Caldbeck 2014).



Figure 4.1. Yesler Terrace (YT) neighborhood (in color).

The Seattle Housing Authority (SHA hereafter) was created in 1939, inspired by New Deal legislation and largely created through the efforts of Jesse Epstein (Seattle Housing Authority 2018). Epstein, who also became SHA's first director, stewarded the development of YT using \$3 million of federal funds made available from the Housing Act of 1937, which subsidized the construction of low-income housing (Caldbeck 2014). Yesler Hill, where YT was built, had been housing low-income families from a range of ethnic backgrounds, and existing residents were given priority in the new development. However, housing in YT was limited to families. Notably, and relevant for the current study, Epstein decided unilaterally that eligibility standards for housing would be applied without regard to race:

So far as racial composition or considerations were concerned, I made the decision administratively, early, that there would be no discrimination, no segregations, and, to me, that particular approach or way of handling the matter was so obvious that I did not

ask the board to declare a policy in writing. I felt that it could be handled administratively and I was also a little concerned that if I raised the question there might be some consideration given to such matters as quotas, maybe even segregation (Droker 1973).

Placement within YT was initially administered using a very simple first-come, first-served waitlist and housing placement policy, resulting in diverse communities not only on the level of the housing project but even when it came to residents' immediate neighbors³:

what made the Terrace different was, you didn't have that choice, you know - when you moved in, if they said you're gonna live in apartment number six-oh-two, that's where you lived - and you, if you had a Asian family living next to you, or a black family living next to you, then that's the way it was, and um - so to me, Yesler Terrace was truly a melting pot, you know, whether you liked it or not. you know, and I think it forced people, to get to know other people, and other cultural- cultures - other ways of life, I mean (YT16, 00:52:13-00:53:00)

This intentional feature of YT distinguished it even from other public housing communities developed in Seattle. Subsequent developments initially housed defense-industry workers and military families, and the SHA faced political and industry pressure not to engage in 'social experimentation' for the sake of WWII production efforts (Droker 1973). While explicitly segregationist policies were not enacted for these housing projects, housing placement into these communities was handled by a different entity than for YT, resulting in *de facto* segregation:

the defense worker housing that was owned and managed by King County, although it was built by the Housing Authority of Seattle, and Renton [Highlands], although it was built by the Housing Authority of Seattle, were not managed by the Housing Authority of Seattle, and they were segregated - so when I moved into Renton Highlands in the late forties, all the African-Americans lived on one street - at the far end of the development, coincidentally or not, next to the cemetery - as far as you could get from the bus stop, from the store, from the school (YT28, 00:17:25-00:18:00).

Additionally, YT borders the areas known today as the International District, First Hill, and Pioneer Square, which historically have large Chinese, Japanese, and Filipino populations. African-American children in YT went to school with Asian-Americans and Whites. This integration in housing and schooling seen in YT in the mid-twentieth century runs as a counter-example to the pattern of residential racial segregation in Northern cities, as described in sociolinguistics research (Rickford & Rickford 2000, Quinn and Pawasarat 2003, Labov 2010), and precedes the Civil Rights Act of 1964 by nearly a quarter-century. The historically high

³ Transcription conventions for the YT interviews are shown in Appendix B.

levels of ethnic integration within YT make it a particularly well-suited community for investigating the phenomenon of interethnic contact.

4.3 THE CURRENT STUDY SAMPLE

4.3.1 *Demography*

The present study concerns itself with African Americans and European Americans that migrated post-World War II to YT from mostly rural areas of the United States. While the first African American resident arrived in Seattle in 1858, and African Americans lived in Seattle in small numbers in the first half of the twentieth century, large numbers of African Americans migrated from the American South for industrial jobs in the North beginning around World War II and continuing into the 1970s (Taylor 2011). This migration is part of the “Great Migration”, the migration of mostly southern, mostly rural African Americans from the South to urban centers in the North and West attributed partly to urban economic opportunity, beginning around 1916 and continuing through the 1970’s (Rickford & Rickford 2000). While the generation under study is fairly geographically dispersed today, the subjects of this study spent the majority of their formative years in YT.

The data for this study are from a set of 23 interviews conducted by Jean Harris, an African American raised in YT, and from an interview of Jean conducted by myself for a separate but related research project (Wassink 2017). Jean moved to the Seattle metropolitan area from Louisiana when she was a year old and moved into YT when she was 7. She resided in YT through high school and had family ties in YT until she was 27. As an interviewee, Jean noted that she interacted in school and play with both African American and European American residents of YT; she has kept contact with both African Americans and whites from YT over the years and, in the course of the YT historical interviews, had rekindled old friendships with community members of both ethnicities. While we do not have detailed demographic information about Jean’s first-order social network, we take her longstanding membership in a territorially bounded, tightly knit multicultural community as evidence of exposure to both local African American and local white speech in the community. Fortuitously, Jean’s participation in



Figure 4.2. Dr. Jean Harris (right), with YT members and interview participants (from left) Bill Francis and Winnie Bascomb Allen (photo credit: Jack Broom)

the Wassink (2017) research project afforded an opportunity for her to provide metalinguistic commentary and detailed commentary about how she regarded YT as a community.

4.3.2 *The interview context*

Between 2006 and 2009, Jean, an anthropologist and college educator, interviewed subjects who spent their formative years in YT about their experience growing up in this public housing community. For the most part, one-on-one interviews were conducted, but in a few cases, Jean conducted interviews with small groups of YT members (up to 3). The interviews were conducted at a pivotal point in the history of YT, when discussions were underway to replace the community's aging residential structures with a mixed-income housing development. Harris' work was undertaken to document the experience of people who grew up in YT in the 1950s and 1960s, many of whom participated in regular YT reunions, and to describe YT as a model for what public housing can be. Thus, all interviewees agreed to the interviews with the understanding they would be contributing to a communal understanding of the neighborhood they called home as children. The interviews and resultant transcripts act as demonstrations of *community-as-value*, where an intersubjective sense of community was achieved by discursive means (Coupland 2010).

Jean and her interlocutors were raised in YT in the 1950s and 1960s, during which YT saw increasing proportional parity between African American and white populations. In 1962, 66% of the families in YT were white, and 22.9% were African American; by 1969 there were slightly more African American families in YT (45.2%) than white families (42.8%). The proportion of white to African American residents in YT was much more balanced than in Seattle as a whole. Census data from 1960 show that 91.6% of the city population were white and only 4.8% were African American (Seattle Housing Authority 1961–68). Since the Seattle public school system was not segregated, the local schools showed levels of integration comparable to the communities upon which the schools drew. In 1962, Garfield High School, the high school the majority of children in YT attended, was 51.4% African American and 35.8% white, compared to 5.3% African American and 91.6% white for Seattle high schools as a whole (Jeffrey 1968).

Jean's interviews and interactions with other members of the YT community can be interpreted within the framework of Communication Accommodation Theory (Giles, Coupland, and Coupland 1991), which explores linguistic behavior in terms of the relationships an individual has with her interlocutors, the communicative goals of the individual and her interlocutors, and group-specific language norms. Jean's interlocutors in the set of interviews examined here are a self-selected group of African American and European American individuals united by their lasting interest in YT and their self-identity as former YT residents. In some cases, participants also participated in YT reunions or retained friendships from their time living in YT. Since they were raised in YT, they likely display competency in the local linguistic norms; but it is likely there is still great variability within the community, because the previous generation (the interviewees' parents and caregivers) came from other regions of the United States (see Trudgill 1986), and because the interview participants all went in different directions and had different life experiences after their experiences in YT. The restriction of Jean's interlocutors to this tightly knit yet multiethnic and linguistically variable social network allows us to view the range of linguistic behaviors Jean and her interlocutors use as informed by a set of very local linguistic norms particular to YT (whether real or perceived). According to Communication Accommodation Theory, Jean and her interlocutors had some incentive to accommodate to each other by showing convergent behavior, because the shared task at hand was to reflect on the positive experience of growing up in the projects. By projecting (in the sense of the term as

described by le Page and Tabouret-Keller's 1985 Acts of Identity model) the persona of a YT insider, Jean and her interlocutors could establish rapport with each other, even if they were unfamiliar to each other, and improve communication effectiveness. Scanlon and Wassink (2010) shows some evidence of accommodation along these lines; in a study looking at variability in Jean's speech, we found that she did show quantitative shifts in core AAL features ((ay) monophthongization and *pin-pen* merger) that were associated with changes in interlocutor familiarity, ethnicity, and interlocutor speech patterns.

It should be noted at this point that different interviewees too can approach interviews very differently. Some might see an interview as a more formal context where one puts forth a very public-facing face; some might think of the interview as an opportunity to chat casually; and yet others might see the interview as an opportunity to explore strongly-held individual opinions. Also, the interviews discussed here vary in the extent to which speakers went on tangents (i.e., stretches of talk where the interviewee initiated a topic change, or where the interviewer asked questions that were not asked in the entire corpus of interviews). This is not unexpected, and is a by-product of approaching the interview as a semi-structured, open-ended, interviewee-driven process. The interviews were conducted with the aim of describing community members' impressions of YT, its importance in their own development, and in the role of and importance of public housing in the lives of residents of public housing. However, individuals who were interviewed had sometimes very divergent thoughts on how to characterize YT, and how to describe the impact that YT had on their lives. Section 4.3.3 goes into more depth on the individual differences in how YT was characterized. While participants' differing approaches to the interview context may make it difficult to generalize across interviews, it affords us the opportunity to look closely at topic shifts when they happen, and attempt to describe how speakers situate themselves in the event of these topic shifts.

4.3.3 *Characterizing YT*

Place-linked language variation is inherently ideologically mediated (see Becker 2009), and a study that takes as a given that the interview topic of discussion is YT needs to accept as a given that individuals are going to have widely varying ideologies around YT. It may be that, on some level, all the individuals who were interviewed took the interview as an opportunity to use

speech acts as *acts of identity* (LePage and Tabouret-Keller 1985) and reflect themselves as insider YT members. Understanding the broader context in which the interviews occurred requires a close look at how people think of YT; this section broadly characterizes YT, based on input from interview participants, along two dimensions, ethnicity and socioeconomic status.

4.3.3.1 Ethnicity

Blake (2014) notes that sociolinguists “need to incorporate the nuances of how groups and individuals define themselves, with and without the imposition of a national ideology of race and ethnicity” (559). It is evident from the interviews for the current study that individuals had varied, and at times quite complex, attitudes about YT and its associations with race and ethnicity. While YT and the surrounding Central District had a much higher concentration of African Americans than other parts of Seattle at the time, YT members’ descriptions of the composition of YT varied. This makes some sense, as the ethnic makeup of the community was in transition at this time; however, the quotes below show how stark the difference between viewpoints regarding the ethnic makeup of YT were. The result of integration in housing and schooling in YT, for some YT members, as noted in interviews, was a true multicultural upbringing:

and that’s how we grew up, so we grew up as a family, it wasn’t about - uh, American, native, it wasn’t about a Hispanic, and it wasn’t about a black or a white - it was about family, I couldn’t call you out of your name, and you couldn’t call me out of my name, you know, and it wasn’t like, you’re a, an Indian, you’re a black guy, you a white boy, you know? that was not tolerated, we were coming from the projects, you know (YT22, 00:08:56-00:09:21)

it was multiracial from the start, or at least to my knowledge - my best friends were Filipinos, Indians, and uh - uh other white kids, and mixed race kids (YT17, 00:04:29-00:04:42)

[JH: why do you think it’s a community?] because it’s made up of so many, to me, it’s made up of so many nations, so many cultures, so many ethnic groups, it’s just made up of the nations, people - and to me they all have - we might have b- we might have been called poor cause we lived in the projects, but we were rich (YT20, 00:19:32-00:20:00)

that’s one of the things that, was always the strongest to me when I lived in the Yesler Terrace - is everyone knew everybody, you know, there was a lot of um - cross-culturalism, I mean (YT16, 00:42:30-00:42:46)

Other interviewees emphasized YT as a primarily minority or African American community:

but see the other part was that - you know, a lot - my world were primarily - black folks, and Asians, not a lot of white folks (YT21, 00:22:12-00:22:24)

I'm just gonna tell you, the neighborhood, Yesler Terrace was just like a little town, it was like a home- town for us, for - the minorities, that's what it was, it was for minorities, cause you had the Asians, you had the, um the Koreans... (YT4, 00:50:33-00:50:51)

and I don't think you'll ever go back and find, that in America again - that type of community where - blacks, not only blended, but also - meshed, and worked together, for the same goals, everybody raised everybody's child (YT10, 00:49:35-00:49:53)

Notably, YT was sometimes characterized as related to other regions. YT constitutes an integrated network of geographically and socially mobile individuals, with strong ties both within and between communities. Scanlon (2007) tracked the diffusion of regional linguistic forms throughout a social network of YT members; the majority of the sample had close social network ties to the Lower South region of the United States, and the study asserted that linguistic features associated with the Lower South were used by central members of the YT community. One speaker had an understanding of the community as connected to the South and as characterized by Southern values:

Yesler Terrace is not the landing, landing ground for people coming up here from the South anymore - remember, Yesler Terrace was, if you came up here from, anywhere other than, than, Oregon or something like that, you came from the South, or somebody in your family did, and the Yesler Terrace at that time, I remember, was a boiling pot for you to start and move on ... [JH: what do you think you got out of growing up [in YT]?] a family - and the reason why I say family - anybody that had five, six, seven, eight, nine people in their family - to me was a mystery because I missed, the family atmosphere that was in the South, you understand what I'm saying, if you had a cousin, cousins that lived in the same area that you lived in down in the South, you guys all looked out for each other, that was a family - well you didn't have a family, just two of you or one of you or, three of you in Seattle - you had a community that looked out for you, which was Yesler Terrace, and that community became your family (YT10, 00:52:22-00:55:05)

There were a number of stories told that demonstrate that YT was a different sort of place from other parts of the country as far as ethno-racial attitudes and tensions went:

there were all ethnic groups, and we never thought in terms of race, you know, so it was really hard, you meet somebody from out of the state, especially the East Coast, and they had a lot of bias and it was like - I never felt that way, you know this uh - you know it was

real- real hard for us to understand (YT7, 00:16:59-00:17:21)

up to that time I, I looked at everybody as the same, there's no difference, but he had gone, come from Baltimore, and uh he told me about having to sit in the back of the bus, because of his being black, and I couldn't understand that, it just uh - really got me very angry (YT18, 00:05:16-00:05:35)

[Name] was always - it wasn't any, racial things, he was never beat up because of, color of his skin - if he had ever got into a fight [name] was just one of the boys (YT12, 00:09:22-00:09:32)

Jean's own commentary on race in Seattle points out that, from her perspective, not only were racial attitudes unique in pockets of Seattle, but the racial context and racial attitudes that she grew up in had implications for how she acted:

Seattle is a crown jewel of liberalness in the Pacific Northwest and the <Q crown jewel Q> of diversity, although we're losing that, we've lost that position, statistically - but when I was growing up it was true... I think the other side of that is that people point out that racism is different here, it was, in the sense that people always describe it as <Q walking into a glass door Q> so you don't know when you're going to encounter it, where in other parts of the country you do, you know that you're gonna have to fight if y-, back then, you're gonna have to fight if you go for certain jobs, you know you're gonna have to fight- if you live in certain neighborhoods, etc., and so forth - now there were neighborhoods that we didn't live in and I remember when a cross was burned in West Seattle, I was a young adult, and I remember a newscaster bought out there on the, quote, <Q good side Q> of 35th, um, and they burned a cross - but it was a big deal, it was all on the news and - the family stayed - and, you know, some places that threat would be heightened and heightened and more frequently the family would probably move, or the violence would increase - so I don't, I don't have any illusions that the Northwest is a paradise, I mean, [name] talks about how she was the first one in her secretarial school and she couldn't get hired, you know, there were certain jobs that we really had to have laws - we had to have a fair housing law to live in certain areas, and I, even today, east of the lake and north of the canal? nah - @ you know I really - I don't like to live there, I wouldn't like to live there [MS: just, sort of, different rules apply? or different-] well, first of all as a person of African descent when I was growing up if you moved to one of those areas you were making a statement about how you saw yourself vis-à-vis the African American community - and also, you had to flex more in those communities to be accepted by those people, where in the other areas people were more flexible on all sides, probably because there was more diversity in the neighborhoods (JH, flexibility, 00:39:16-00:44:03)

I think this passage is notable for a few reasons. First, I think it is a clear-eyed assessment, in that it reflects that race relations in Seattle were far from ideal, and there were geographical pockets and domains (like hiring practices and housing restrictions) where Seattle was very much like

other parts of the country at the time. Second, Jean talks about the need to ‘flex’ in particular communities; while she’s not speaking exclusively in terms of language use, her description seems to be along the lines of what Rahman (2008) calls ‘linguistic diplomacy’, or what Myers-Scotton (1998) calls ‘codes and consequences’. Both of these linguistic frameworks describe particular ways that African American speakers negotiate their context through meaningful, deliberate use of language. Rather than being broad language frameworks, they both seek to describe a particular social context for understanding the use of features associated with AAL, where the consequences are set up in a particular way for African American speakers, and acceptance within a particular context is dependent on the appropriate behaviors and on the use (or non-use) of linguistic forms associated with AAL. YT seems like an interesting place to study linguistic variation because it appears to be one of those areas where, in Jean’s words, ‘people were more flexible on all sides’. She outlines one particular social outcome related to this cultural difference when she relates an exchange with someone from the Philadelphia area about how black people from the Pacific Northwest aren’t ‘intimidated by white people’:

I remember a friend, you know, a Quaker friend saying to me when I was in, um, Philadelphia, she had met another man from the Northwest who actually is godchild to her kid, one of her kids, and she said <Q you know you guys from the Northwest are different Q> she was saying that this guy, [name], had been a vegetarian for 20 years at that time, this would have been in the eighties, and she said <Q (tisk) mm, <X that doesn’t happen X> Q> and you know, it doesn’t, you know, that’s new out here, for black people - and I remember her saying to me once, <Q you know what, you’re not intimidated by blac-, by white people, and I said <Q so what’s to be intimidated? Q> <@you know@> and she said <Q but you’re not Q> and I said <Q so what’s to be intimidated? Q> and she said, well why aren’t you? and I said, <Q I dunno Q> you know, I grew up with these kids and I knew some were smart and some were dumb and some were good and some were bad and some were ugly and some were cute, and they’re just like everybody else - and she said <Q yeah, but we didn’t know that Q> and she said, her sisters -this woman was a little bit younger than I, and her sis-, this was Philadelphia, and she said her sisters actually were in that first wave of integration and she said the interaction was very different, it was much more tentative - um, and, you know you didn’t, it wasn’t common that you’d go to each other’s parties or that you’d have people in your house and stuff, and we didn’t think anything of that, so I think that’s a Northwest thing (JH, lack of intimidation, 00:40:41-00:42:05)

Working from this quote, this study attempts to describe YT as a place that is different somehow than other parts of the country where AAL has been studied more extensively. To me, Jean’s quote implies that within YT, features and attitudes associated with certain ethnicities weren’t as

clear-cut as they might be in other places, and that it wasn't as important to signal ethnicity in YT as it might be in other places. This study can be seen as a step towards answering the question: when the consequences for speaking forms associated with AAL are different from those described in 'codes and consequences'-style frameworks, what is different about how people use language within these environments? While the linguistic variants that are available to speakers in YT are partly based on ethnicity and historical migration patterns, characterizing YT solely based on its ethnic makeup, and talking about YT members' interactions as driven primarily by ethnicity is a distinctly community-as-demography (see §2.4) approach to YT. While the community-as-demography approach will allow us to identify differences in language use between African American and European American YT members (§7), a better understanding of the *values* associated with YT would allow us to ask larger questions about the use of features associated with AAL in YT in an exploratory fashion. As described in the next section, the values members associate most closely with YT are tied to notions of social class.

4.3.3.2 Socioeconomic status

The speech of working-class African Americans formed the bedrock of AAL study in sociolinguistics, and study of the speech of middle-class African Americans has gained ground in recent years. However, much of the work that has been done on AAL in sociolinguistics is either with speakers who are squarely lower- or working-class (e.g., Labov, 1972; Rickford & McNair-Knox, 1994), or speakers who are squarely middle class or higher (e.g., Weldon, 2004; Britt, 2011). It is not easy to draw comparisons between the socioeconomic profile of participants in this study and that of other communities that have been studied in sociolinguistics, or to segment the current sample cleanly by socioeconomic status because unfortunately, social class data, as it's traditionally measured and described in most social science research, was not collected for this study, and not available as a factor in these analyses. While all the speakers spent some time during their childhoods in public housing, speakers varied widely in their levels of educational attainment and occupation at the time of the interviews. High school graduates were interviewed, as well as individuals with degrees in higher education. Nor does current occupation give a clear picture of status: one speaker who was a bus driver also serves as a pastor, which confers him some status in his social network. However, describing and understanding participants' stance towards socioeconomic status and class is important, because individuals' relationship to class is

on display during the YT interviews.

In the greater context of the interviews, social class was on the minds of many interview participants. At the time of the interviews, planning was underway for Yesler Terrace to be renovated and transition from an exclusively public housing community to a mixed-use community, where much of the newly built housing would be available at market rates and ultimately go to high-income buyers. Many YT members were concerned that the character and values of YT would be lost in this transition:

I just hope they don't tear the Terrace down [JH: yeah - why?] (H) (Hx) um, too many people need a place like that - (Hx) oo, my life would be a whole lot different -- and I don't think it would've been for the better (YT18, 00:45:48-00:46:40)

At the time of the interviews, Jean's thinking about class and positioning was influenced by a book by Alfred Lubrano (2004) called *Limbo: Working-Class Kids, Middle-Class Dreams*. In the book, Lubrano discusses individuals he calls 'Straddlers' – people who came from working-class backgrounds and who by virtue of education occupy more middle-class social spaces in adulthood. Jean herself described the social class of her family growing up as working class, and her social class now as middle class (based on demographic data collected as a part of the Wassink (2017) study). Straddlers, in Lubrano's view, tend to carry working-class values with them even as they navigate middle-class environments where cultural values may be quite different, and Straddlers' working-class upbringings tend to be both a source of pride and conflict in middle-class environments. Many of the YT residents Jean interviewed could be characterized as Straddlers – many of them were first-generation college students, and in their interviews many of them talk about the working-class values they developed in part by living in YT. Wherever interview participants had ended up in their lives, they tended to speak to how living in YT had helped shape the values they carry today:

it wasn't bad because I think out of it, I've got some values and some principles, which, I think, puts me where I am now, because, if I, I really feel that being a- living in the projects, I don't care what kind of interpretation people have, there was some basic fundamental things that we got (BG, 00:35:47-0036:06)

Jean herself expresses this idea about class and positioning in her interview:

what I've been thinking about and what I was talking about with the other person that I interviewed was how our understanding of the values that we got by being positioned in a particular way, how these values have influenced the way that we see the world now and the way that we respond even though we're in a different socio-economic class... so sometimes, um, attitudes toward people who are middle class, for example, the person that I was telling you about, we both have these ideas about these people and their sense of entitlement, for example, it just drives us nuts, you know (JH, 00:34:35-00:35:13)

One speaker talked specifically about how her background has informed her class consciousness:

I am also acutely aware of class, a little, maybe a little overly sensitive to class issues, but - and it, it carries with me, you know, I can't rid myself of it ... I am quite class conscious [JH: I would love it if you would tell me a little bit more about that] ... wealthy people, or even middle- absolute middle-class people who grew up, you know like Beaver's family - don't much like them, don't much think they have, that they've lived a kind of privileged fairy tale life, and that there are some issues that, that they just um - um, aren't sensitive to - [JH: such as?] such as welfare mothers, and the way they look down their noses at them, my mother was a welfare mother for many years, you know, and it wasn't her fault, she worked when she could, but [name] wouldn't talk until he was, like, I don't know, he just <@ refused @> so, so, you know, she couldn't put him in day care, so she had to, stay home and be a welfare mother, there's lot of things that impact women, you know, and child-rearing and women, they, they put so much of themselves into raising their children and make so many sacrifices that I, you know, do not like the way they are judged by the Republican Party, by people of a different class, you know, middle and upper class - and although I make enough money now to consider myself, you know, financially, in those classifications, I do not, would never vote, or have sympathies with these people ... yeah, I have, I have trouble understanding even the worldview of people who are raised, you know in this, X more affluent backgrounds, with privileges - um, not very sympathetic to their - problems, you know - so, my definition of class is, I don't want to dress - you know, or make an appearance that is of a higher class - and I don't want to carry those values with me - so I do have a prejudice against people of, you know, of uh, you know, who, who flaunt their, their cars, their um money (YT19, 00:21:33-00:24:32)

Several interviewees commented that growing up in YT imparted specific values, in part because of its status as a working-class neighborhood. Several interviewees noted that their time in YT taught them to not look down on others and to be open-minded, and that that value was useful in other environments:

I wouldn't have traded my experience living in the Terrace for, anything - I think it's made me a better person - I'm not judgmental - or I don't, think that I'm judgmental, I hope that I'm not judgmental, of people um - I accept all people, any people - for who they are and what they are, face value, I mean you know, you can never make judgments on people until you really truly get to know them, it has helped me, with my job, I mean,

um - cause I can identify with people who are on the lower end of the socio-economic ladder (YT16, 00:55:00-00:55:52)

but I do think Yesler Terrace is a very special place - um, why it's special - for me, is really - that I've never had another opportunity like that, another place to live like that - in the Philli- really prepared me for living in the Phillipines, to - to not have preconceived notions about people - to be open to experiences (YT27, 00:37:10-00:37:55)

Since the interviews were conducted with people who grew up in YT, YT was often characterized in terms of what it meant to kids, and here in particular the consideration of YT as a special kind of working-class community where members felt safe is very important. Common themes included community members pulling together to help each other, sharing food, having resources and opportunities nearby due to the central location of the project, and knowing that they had their basic needs met.

in the Yesler Terrace, everybody knew everybody, so if you got on a bus and you acted up, somebody on that bus would get to your mother before you even got home, and and, you know – grownups could tell us then, you guys be quiet or, or whatever and we respected our adul- you know, the adults and stuff, which I don't think, you know, people do now - but it was kind of like um – you know – it's real hard to describe – a protective thing, you know, um, that all the people lived there had our best interest, at heart (YT7, 00:49:12-00:49:53)

what made Yesler Terrace a community, was the fact that - all the mothers, that were housewives at that time, took care of everybody in that area - if I fell down and scraped my knee, Miss [NAME], [NAME]'s mother, Miss [NAME], all of them could put a band-aid on me - and for some reason, my mother knew about it before she even came home, that something had happened to me - uh, something happened to [my sister] or whatever - people just looked out, there was a white couple that lived in the apartment, they were older – [NAME] - and uh, they were, could look in our back door, uh [NAME] and uh [NAME] could look at our front door, so - they were home, so anything that happened, they knew about it, [NAME] lived next door to us, I mean the signal was a knock on the do- on the wall - and you know, with her Southern self, it was always, [NAME] come see - or come here, so - my mother just, put us in those people's hands - and - we grew up, with that community (YT10, 00:47:35-00:48:48)

but you know what's, the thing that I, I think of too - where the Terrace was located - our schools were accessible to us, our parents didn't have to send us outside of the country, our schools were within walking distance, our churches were, the most part, were, were within walking distance, if you didn't have a car, the stores were in wa- I mean, how convenient could that have gotten (BG, 00:50:01-00:50:32)

40-43: *used to walk around Chinatown all the time, and getting sour balls and ginger, and that was like, you know, hey it's just right down the street, really just, go down by the old bum hotel there and just go right down there to Jackson street and we're in Chinatown, you know - the hillside, you know, just went up the hillside, you know, get boxes, we'd go down to Chinatown and get big old boxes, like they put, refrigerators and things like that, slide down the hill* (YT22, 00:41:50-00:42:23)

Some interviewees talked about how the combination of all these factors meant that they were able to have a “real childhood” that felt safe, where they could have fun:

well I think for a kid growing up the Yesler Terrace was a safe place (LM, 00:29:03-00:29:07)

a community member um -- I don't know, I I - I just always felt - comfort - and - in spite of what other people thought, I felt safe (YT16, 00:50:18-00:50:41)

being in Yesler Terrace for me was a very protective environment - I never worried about things like people worry about now - uh you walk in the streets of the central Area even, we walked and, never worried about getting, having any problems (YT12, 00:11:20-00:11:35)

it was a real childhood, you know, children nowadays are robbed of their ch- of their childhood, because of - um, the society has, has let so many, uh, adverse elements, into - that, that children are exposed to - and, and, a child is supposed to be innocent, up to a point, and you know, and then their world broadens and expands and ...[nowadays] everything is, it's like it's given to children at one time, you know, whether they comprehend it or not, and it, and it makes them something else, and it's, I think it's just unfortunate, but, when we lived in the Yesler Terrace, we were, we actually had a childhood (YT8, 01:06:31-01:07:19)

In summary, given the features of YT and the interview situation, social class and related community values were salient aspects of YT during the interviews, more so than ethnicity. The attitudes that YT members express about their community allow us to conceptualize YT as a community-as-value (§2.4), where the values salient to the community in this particular interview context are thought of as working-class values of mutual help and understanding, and safety and freedom associated with childhood. Understanding how YT members characterized the values of YT, and their connection to social class, will help us to understand whether and how linguistic variation within this corpus of interviews reflects community-as-value. Based on previous literature, it is possible that speakers might utilize features associated with AAL in YT in a way that conveys a complex multivalent identity (see §3.3.3) related to both place and social

class (Grieser 2013, Becker 2014). While it would be difficult and likely misguided to draw broad connections between the speakers' socioeconomic status and the study results in future chapters, in §8, I give particular attention to individuals' values, stances, and positioning in relation to their moment-to-moment linguistic variation.

4.4 SUMMARY

This chapter described the community under study, YT, and provided both a historical context for the current study and a summary of speakers' perceptions of YT, drawing extensively from interviews conducted with community members. It described some theoretical frameworks that speak to interactional linguistic work and notes how these frameworks are pertinent to our understanding of the study's interview context. It used quotations from participant interviews to support a description of YT as a complex multicultural and socioeconomic environment that influences participants' behavior and attitudes to this day. I hope to have conveyed how the Pacific Northwest and YT are unique places in which to study linguistic variation in forms associated with AAL, and provided some context for how speakers under study are situated within these places. In particular, characterizing YT exclusively based on ethnic makeup is a community-as-demography approach that doesn't comprehensively reflect how actual YT members consider the community. Social class appears to be a more salient defining characteristic of the community within the context of the interviews, and characterizing YT based on values associated with social class constitutes a community-as-value approach. Understanding how community membership aligns with values will be important for understanding the locally defined social meaning of linguistic variables among community members. The next chapter describes the linguistic variables considered for this study.

Chapter 5. LINGUISTIC VARIABLES

5.1 INTRODUCTION

To examine the theoretical questions outlined in the previous chapters, a set of vocalic variables is selected to describe English vowel production among YT speakers (§6), identify variables that show inter-speaker variation among the community under study (§6), and show intra-speaker variation among variables with either high variability in the community or ethnicity-based variability (§7). For each variable considered here, I describe what regional/ethnic patterns I hope to better understand by examining these variables in YT speakers.

The variables chosen for study here have associations with place and with ethnicity, and understanding how they operate within a population of ethnically diverse Seattle speakers will require considering how place and ethnicity interact in their use. /ai/ reduction and PIN-PEN merger are associated with super-regional AAL. COT-CAUGHT merger is considered a distinguishing regional characteristic for the Western United States, including Washington State. BULL-BOWL merger is well attested in the Northwestern US. BEG/BAG-raising and back vowel fronting are both common in various parts of the United States, but these variables appear to show patterns that are unique to the Pacific Northwest. Analyzing each of these variables will give us a better understanding of: 1) how similar the YT distribution of these vowels is to their distribution in previously studied populations in the Pacific Northwest; and 2) how consistent each variable is among the sample of YT speakers - i.e., which variants are locally available resources for use in intra-speaker variation.

For the purpose of review, for each vocalic variable reviewed here, the following information is provided where possible from previous literature: phonetic characteristics of the variable; effects of preceding and following consonants; and any known differences in vowel production by ethnicity (i.e., known contrasts between comparable African American and European American speakers). Where vowel production data from African American Seattle or Pacific Northwest speakers is not available, this is noted as well. This chapter's overview of vowel variables in the Seattle area is drawn largely from Wassink (2015, 2017), which examined the speech of three

generations of Seattle-area speakers; speakers from the YT sample would fall either in the oldest generation (those born between 1900 and 1950) or the middle generation (those born between 1951 and 1970). As such, for variables that show generational differences in production, we do not necessarily expect to see the most advanced vowel productions in the YT sample, although word elicitation was from more formal speech contexts in Wassink (2015, 2017) (tokens were drawn from word list and reading passages, as opposed to semi-structured interview speech in the YT sample). Where possible, I have made comments about expectations for variables that show differences across generations in Wassink (2015, 2017).

5.2 VARIABLES

5.2.1 /aɪ/

/aɪ/ reduction is the reduced production of the glide in words like *hide*, *height*, and *high*. The resulting vowel can be monophthongal (i.e., [a:]) or reduced (i.e., [aɛ] or [aæ]). Labov, Cohen, and Robins (1965) noted that /aɪ/ glide reduction before voiced obstruents (BIDE; e.g., *hide*, *prize*) and in open syllables (BUY; e.g., *high*, *pry*) is a powerful signal of dialect shift among African Americans in Northern cities. Similarly, Rahman (2004, 2007, 2008) found that monophthongal or reduced-glide variant of /aɪ/ is likely to be present, even in the absence of other segmental features of AAL, and asserts that reduction of /aɪ/ is a crucial and salient linguistic marker of African American identity. A wide range of studies of this variable show that African Americans commonly reduce the vowels of BIDE and BUY, but maintain a diphthongal vowel before voiceless consonants (BITE, e.g., *height*, *price*) (Thomas 2001, 2007; Nguyen 2006). Monophthongal or reduced BIDE is a common variant among both Southern white and African American speakers, but in the North, white speakers tend to retain the full glide in all phonetic contexts, while AAL speakers reduce the glide (Ash and Myhill 1986; Deser 1990; Edwards 1997; Gordon 2000; Labov, Ash, and Boberg 2006, Oxley 2015). BITE tends to be fully diphthongal in the Northern United States regardless of speaker ethnicity, but in some regions of the South, White speakers show monophthongization for BIDE, BITE, and BUY, while Southern African Americans tend to confine monophthongization to BIDE and BUY (Thomas 2007).

Some recent studies have examined /aɪ/ production in Washington State. /aɪ/ is generally not reduced in non-African American groups in the Seattle area (Swan 2016). Wassink (2015) found that, for a sample of Caucasian Washington State speakers, the /aɪ/ vowel had a low central nucleus and long front upglides. Previous research on /aɪ/ reduction from YT showed that the African American subjects show higher overall /aɪ/ reduction in an interview context than their Caucasian counterparts, and that mean /aɪ/ glides in the prevoiced and open contexts were consistently shorter than glides in the prevoiceless context (Scanlon and Wassink 2010a).

Additionally, /aɪ/ is one vowel that is affected by what is known as ‘Canadian Raising’, although geographically it’s found well outside Canada. Canadian Raising is characterized by F1 (height) differences between BITE (where vowel nuclei are raised) and the same vowel classes in other environments (BIDE/BUY, where vowel nuclei are unraised) (and analogously BOWED, etc.; Chambers, 1973). Canadian Raising has been described as a phonologization of perceptually motivated hyperarticulation before voiceless consonants (Moreton and Thomas, 2007), but recent work shows that there may be geographical and demographic variability in how raised pre-voiceless diphthongs are produced (Swan, 2016). There is evidence that some Washington State speakers do participate in /aɪ/-raising. Sadlier-Brown (2012) studied four Washington State speakers from Olympia, Shelton, Aberdeen and Cosmopolis, and found both differences in F1 and F2 between BITE and BIDE/BUY; BITE onsets were fronter and higher than those for BIDE/BUY. Similarly, Swan (2016) found that Seattle speakers participate in raising and fronting of BITE relative to BIDE/BUY, and further found that height and fronting differences were present at vowel onset, and were more pronounced in women than in men. However, patterns of Canadian Raising affecting the BITE vowel class were found for younger speakers (Swan 2016); speakers in this sample were all born after 1978, and BITE-raising was most pronounced for Seattle speakers born after 1988. As such, we do not expect to see strong evidence of Canadian Raising in the sample of YT speakers, who were all born before 1970.

Due to /aɪ/’s status as a showcase variable for African American English and apparent differences in production of these vowels between African American and European American Seattle speakers, this study examines /aɪ/ glide production for a larger sample of YT speakers

than was studied for Scanlon and Wassink (2010a). Though /aɪ/ has potentially strong indexical relationships to AAL, ethnic identity may intersect with other facets of identity, such as socioeconomic class, region, situational formality, and ideology, and so this variable is a worthwhile object of study regarding questions of group-associational and interactional meanings of linguistic features.

5.2.2 *Fronting of back vowels*

The fronting of back vowels /u/ BOOT, /ʊ/ BOOK, and /o/ BOAT vowel classes is a fairly widespread phenomenon among English-speaking peoples, but there is some evidence that fronting of these vowels in the Pacific Northwest looks qualitatively different than in other parts of the United States. Wassink (2015) examines BOOT-fronting in a sample of Seattle-area European American speakers, and found that the pattern in Washington State was distinct from the California Vowel Shift (Hagiwara 1997; Eckert 2004; Kennedy and Grama 2012), which involves fronting of the BOOT, BOOK, and BOAT vowel classes. Seattle-area speakers were found to front the BOOT and BOOK classes, but not the BOAT class, and fronting was most advanced in younger speakers. Wassink (2017) also sampled vowels from 6 African American speakers in Washington State – one man from the Spokane area and 5 women from the greater Seattle area. In contrast to the Seattle-area Caucasian sample, she found no BOOT-fronting among the African American sample. However, a linear mixed effects analysis of normalized midpoint F2 found no significant difference in BOOT-fronting by ethnicity. As Wassink (2015, 2017) found generational differences in BOOT-fronting, we do not necessarily expect to see BOOT-fronting as advanced as that found in Wassink (2017) in the YT sample.

Additionally, /u/ after coronal consonants (as in *two*, *do*, *shoe*; hereafter, TOOT) is fronted relative to non-postcoronal BOOT in most parts of the United States (Labov et al. 2006). Speakers from the West differentiated BOOT and TOOT F2 values at vowel midpoint by 362 Hz on average, accounting for other factors, with the mean F2 value of TOOT frontier than the normalized center of the entire sample's vowel space. However, Labov et al. (2006) combined Seattle speakers with speakers across the immense dialect region named the West for analysis; as Seattle English vowels differ somewhat from English vowels in other parts of the Western region

(Wassink 2017), it is not clear from existing literature whether TOOT behaves differently than BOOT for Seattle speakers.

Given these observed differences in Seattle, the current study examines the BOOT, TOOT, BOOK, and BOAT vowel classes in YT speakers, to describe the extent to which they front, and to describe whether and to what extent the distribution of these classes varies by speaker ethnicity.

5.2.3 *Low back merger*

Merger of the low back /a/ COT and /ɔ/ CAUGHT classes is considered a distinguishing regional characteristic for the Western United States, including Washington State. The low merged vowel has been described as located in the back corner of the phonetic space (Labov 1991, Labov et al., 2006). Wassink (2015) found that for three generations of Seattle-area speakers, low back merger was quite advanced throughout the sample, but not complete in all speakers, confirming early phonetic descriptions made by Reed (1952). While tokens of the merged vowel classes occupied a wide phonetic region, Wassink (2015) found gender differences in the phonetic quality of the merged vowel. Males were more likely to use a phonetic form that was more fronted, females were more likely to use a form that was backed, and older females had the most conservative (backed) phonetic form for these classes. Wassink (2015) found no lexical effects among the study's speakers, but some speakers hypercorrected, causing a flip-flop pattern (Labov 1994; Hall-Lew 2013; Becker, Aden, & Best, 2014). Wassink (2015) notes that Seattle speakers' production of the merged vowel is not backed to the extent seen in Northern California (Clarke, Elms, and Youssef, 1995), distinguishing COT-CAUGHT production in the Pacific Northwest from that of other Western regions.

Thomas (2007) notes that African American speakers tend to resist COT-CAUGHT merger in regions where the classes are merged among European Americans. Thomas (2007) speculates that African Americans may retain distinct COT and CAUGHT vowels because the COT class tends to be relatively fronted in AAL. There is comparable data for Washington State; Wassink (2017) contrasted COT and CAUGHT data from Wassink (2015) with data from a sample of African Americans, and found that the two classes were nearly merged for African American

speakers, but these two classes were more distinct than for any other ethnic group studied. In contrast with the speakers from Thomas (2007), Wassink (2017) found that Washington State speakers distinguished COT and CAUGHT by height rather than by fronting. For the sample of African American speakers, height differences between the two classes fell above the threshold for perceptual discrimination, with higher F1 values (lower height) for COT-class vowels than CAUGHT-class vowels.

Given the differences in low back merger between African American and European American Washington State speakers noted in Wassink (2017) and more generally in Thomas (2007), the current study examines COT and CAUGHT production in YT speakers, to describe how merger and vowel position for these two vowel classes might vary by speaker ethnicity.

5.2.4 *BULL-BOWL merger*

Merger of prelateral back vowels /ʊ/ BULL and /o/ BOWL is identified as a merger of interest in Labov et al. (2006). Spectral merger of these two vowel classes is attested in the West, specifically in Oregon (McLarty, Kendall, & Farrington, 2016) and Utah (DiPaolo & Faber, 1990). Earlier studies of Seattle-area English have noted that /o/ is produced as a back monophthongal vowel (Ingle et al., 2005; Wassink, 2015; Wassink, 2017), and was often produced with the lowest F2 values (greatest retraction) of all the vowels in a speaker's vowel system (Wassink, 2017); Wassink (2017) also found that /ʊ/ BOOK was fronting somewhat for younger Caucasian speakers, and visual inspection of vowel plots of African American speakers in Wassink (2017) suggests that BOOK fronting was found among African Americans as well. Squizzero (2009) conducted a perceptual experiment focusing on BULL-BOWL merger, and found that native Pacific Northwest speakers were unable to correctly categorize the two vowel classes above chance when listening to words in isolation by a native Pacific Northwest speaker. Stanley (2017) examined word-list and minimal pair data for BULL and BOWL in speakers from Cowlitz County, Washington (South of Seattle and adjacent to Oregon), and found spectral merger of BULL and BOWL in the word list condition but not in minimal pairs.

To date, there is some evidence of ethnicity-based differences in the production of /ʊ/ and /o/. Labov et al. (2006) found that African American speakers throughout the United States were

more likely than European Americans to merge BOWL and BULL. However, this pattern has not been studied in the speech of African Americans native to the Pacific Northwest. The current study examines YT speakers' productions of the BOWL and BULL classes, to see if ethnicity-based differences exist in YT as in other parts of the United States.

5.2.5 *PIN-PEN merger*

Merged PIN-PEN, where the merger of /ɪ/ and /ɛ/ before nasals results in homophonous productions of *pin/pen*, *tin/ten*, and *thin/then*, is described as a relatively uniform feature of African American Language throughout the United States (Labov et al., 2006; Thomas, 2007). Outside of the South and the Southern Midwest, the predominant African American pattern of merged PIN and PEN vowels contrasts with the pattern found in European Americans, where the two vowel classes tend to remain distinct (Labov et al., 2006; Thomas, 2007). Scanlon and Wassink (2010b) found that in one native Seattle speaker, PIN and PEN were merged at midpoint, though the two classes were differentiated by duration and by spectral movement over time (i.e., degree of gliding). In terms of vowel height, the merged vowel class was produced roughly midway between production for BIT and BET. Scanlon and Wassink (2010b) also looked at overlap between PIN and PEN in semistructured interview data for 9 African American and 3 European American speakers from YT, and found that while African American speakers tend to differentiate PIN and PEN somewhat by vowel duration and degree of gliding, these features did not distinguish the two vowels in European American speakers, who differentiated the two vowels spectrally. These results suggest that no spectral overlap but duration and degree of gliding differences between the two vowel classes may be a local and distinct African American pattern.

Due to both PIN-PEN merger's status as a showcase variable for African American English and apparent differences in production of these vowels between African American and European American YT speakers, this study examines PIN-PEN production for a sample of YT speakers using a more robust analysis than was used for Scanlon and Wassink (2010).

5.2.6 BAG/BEG raising

Early phonetic work in Washington State described that low front vowels in the prevelar nasal context /æŋ/ BANG were raised roughly to mid-front [e] (Reed 1952), and before velar stops /æɡ/ BAG was raised to predominantly [ɛ] or [ɛ^l] (Reed 1961). Wassink (2017) found that the vowel in BAG was raised to strongly overlap with non-prevelar /ɛ/ BET. Similarly, the vowel in /ɛɡ/ BEG showed some raising, and had pronunciations ranging from [ɛ] to [ɛ^l] (Reed 1961). However, Reed (1961) referred to the raised variants of these vowels as ‘infrequent’. Wassink (2017) describes Seattle-area BEG production as overlapping strongly with that of /e/ (i.e., so *beg* rhymes with *bake*). Similar prevelar raising can be found in other parts of the United States, particularly in the Midwest (Labov, Ash, and Boberg 2006; Benson, Fox, and Balkman 2011). However, Wassink and Riebold (2013), Wassink (2015), and Wassink (2017) argue that this pattern of lax front raising appears to be phonetically motivated rather than due to dialect mixing. They argue that BAG raising observed in Washington State appears to be part of an emerging regional pattern; in contrast to other parts of the United States, where low front raising is lexically restricted or occurs with implicational ordering, raised /æ/ in Washington State occurs in all voiced prevelar environments, and similar changes are occurring in neighboring regions like Oregon (Becker et al. 2016). Wassink (2017) found that /ɛɡ/ BEG raising was relatively widespread, but restricted to specific lexical items. Wassink (2017) also asserts that BEG raising appears to be an independent linguistic pattern in the Pacific Northwest, because it doesn’t appear to be related to BEG raising patterns in other parts of the United States, such as BEG raising as part of the Southern Shift (Labov, Ash, & Boberg, 2006). To contrast with the /æɡ/ BAG class, BEG-raising was lexically restricted in Wassink’s (2017) sample.

Among Seattle-area African Americans, Wassink (2017) did find evidence of these speakers’ participation in prevelar raising of BAG, but not BEG. For these 6 speakers, BEG positions were proximal to BET positions. Riebold (2015) found some evidence of /ɛɡ/ VAGUE lowering and backing for African American female speakers from the Seattle area, such that the VAGUE vowel was positioned somewhere between BAIT and BET.

Given the differences in BEG-raising between African American and European American Washington State speakers noted in Wassink (2017), the current study examines BAG and BEG

production in YT speakers, to describe how merger and vowel position for these two vowel classes might vary by speaker ethnicity in this sample. Based on initial auditory impressions from the YT dataset, the current study makes a few additional comparisons. First, there seems to be some difference in production of voiceless and voiced prevelar /ɛ/ (BECK and BEG, respectively) and /æ/ (BACK and BAG, respectively). Secondly, the current study makes a comparison between prenasal prevelar and non-prenasal [æŋ] (BANG) and [ɛŋ] (PEN) and prevelar [æɡ] (BAG) and [ɛɡ] (BEG), based on initial auditory impressions that prenasal tokens of this vowel are raised as well.

5.3 SUMMARY

This chapter has given an overview of the vowel classes under study, highlighting regional and ethnic differences in their production, and identifying what additional information about each variable I hope to gain by studying them here. Table 5.1 summarizes the extent to which each variant is understood as differentiated by region, and the extent to which each variant is understood as a feature of (non-Southern) AAL cross-regionally. From this examination, /ai/ reduction and PIN-PEN merger can be understood primarily as variants associated with AAL. Back vowel fronting can be understood as a Western feature with a unique distribution of forms within the Pacific Northwest. COT-CAUGHT merger can be understood as a prototypically Western variant, with some possible differences in vowel position specific to the Pacific Northwest. BAG/BEG/BAKE can be understood as a set of variables that show different distributions in the Pacific Northwest and other parts of the West. BULL-BOWL merger is perhaps the least understood of these variables, but there is substantial evidence that this merger is present to some extent in the Pacific Northwest. Also note that for many of these variables, intra-speaker variation has not been studied (but see Scanlon & Wassink 2010a for a study examining intra-speaker variation for /ai/ reduction and PIN-PEN merger). Chapter 7 examines intra-speaker variation for variables that show variability in the larger YT sample.

Table 5.3. Summary of regional and ethnic distribution for the study variables

Variable	Variable shows unique pattern in Western US?	Variable shows unique pattern in PNW?	Variable distinguishes AAL from European American English in PNW?
/aɪ/ reduction	No	No	Yes
PIN-PEN merger	No	No	Yes
Fronting of back vowels /u, ʊ, o/	Yes	Yes	Yes, AA speakers don't show BOOT-fronting
COT-CAUGHT merger	Yes, merged vowel	Possibly, to some extent; merged vowel seems fronter in PNW than in Northern California Shift	Yes, to some extent; AA speakers show less complete merger than EA speakers
BULL-BOWL merger	Unknown	Possibly? Strong evidence this merger is present to some extent in PNW	Unknown
BAG/BEG raising	Yes	Yes	Yes: AA speakers show raising of BAG but not BEG

Based on these overviews, the next chapter outlines and tests hypotheses about the production of these vowels in the speech of YT members.

Chapter 6. YT GROUP-LEVEL ANALYSIS

6.1 INTRODUCTION

This chapter describes a variationist analysis of 6 vocalic variables among YT speakers. It analyzes how these features pattern at the community level and looks at differences in vowel production between African American and European American YT members. It describes the speakers who took part in the study, the vowel classes included in the analysis, acoustic vowel measurement for the study, coding for each vowel, and the normalization method used. Analysis methods and results are described for individual variables.

6.2 METHODS

6.2.1 *Speakers*

Jean Harris interviewed 23 subjects (19 African American, 4 European American) who self-identified as Yesler Terrace (YT) members, and who lived in YT at some point between 1940 and 1964. Additionally, the author (MS) interviewed one European American subject from this community. This time period was chosen partly as a convenience sample, and partly because the dates have racial significance. In 1940, YT was founded as the first racially integrated public housing community in the US, and in 1964 the Civil Rights Act was passed.

YT speakers' nativeness to the region can be classified according to Chambers' Regionality Index (RI; 1994, 2000), which places each subject on a scale from 1 (labelled *indigenes*) to 7 (labelled *interlopers*). An individual who is native-born to a region, has lived there all their life, and has parents who have lived in the region is classified as a true indigene, whereas a recent arrival to the region without family ties to the region is classified as an interloper. RI scores are calculated based on the place where subjects were raised between the ages of 8 and 18, the place where the subject was born, the place where the subject lives now, and the place where the subject's parents were born. Although there is some variation in what a particular RI score represents, Table 6.1 shows typical profiles for each RI score.

Table 6.1. Regionality Index (RI) with profiles for intervals from RI1 to RI7 (based on Chambers, 2000)

Status	RI	Profile (note: other combinations are possible)
Indigenes	1	born, raised, living in same place as parents
	2	born, raised, living in city, parents born in region
	3	born, raised, living in city, parents born out of region
	4	raised and living in city, but born elsewhere in region
	5	raised and living in city, but born outside of region
	6	living in city, but born and raised elsewhere in region
Interlopers	7	living in city, but born and raised elsewhere in region

Subjects with RI scores of 1-2 are not found in the present sample, because few YT residents had parents born in the region. The majority of speakers in the sample can be classified roughly as having RI scores of 3-5, were raised in YT through adolescence, and were born between 1935 and 1955. Two speakers were born and raised in Southern Louisiana and moved to Seattle at the ages of 16 and 17, respectively. While they lived for some time in Yesler Terrace and consider themselves as former members of the community, their speech is most likely representative of the region they were born and raised in rather than representative of the Pacific Northwest. They were included in the sample in order to get a clearer picture the linguistic variability among individuals who consider themselves African Americans and members of YT. In other words, they were included in the present study because of their ethnicity and group membership, rather than making a basis for inclusion a presupposition that these speakers will represent some regional variety of English. Regionality is not considered as an independent variable for this study.

Table 6.2. RI scores for sample (Score descriptions from Chambers, 2000)

	<i>RI score</i>						
	<i>Indigenes - born, raised, and living in survey region</i>			<i>Raised and living in survey region but born outside</i>		<i>Interlopers – living in survey region but born and raised outside</i>	
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>
<i>European American (n=4)</i>	-	2	-	1	1	-	-
<i>African Americans (n=15)</i>	-	-	6	-	7	2	-

6.2.2 Data collection

An interviewer (Jean Harris) who self-identified as a member of YT conducted 23 of the interviews in subjects' residences or in public meeting rooms. 1 interview was conducted by MS in the subjects' residence. Most of the YT interviews were conducted in dyads, but one was conducted with a group of three subjects, and relatives or friends of the subjects were often present during the interviews. The interviews were centered on the topic of growing up in Yesler Terrace, but were casually conducted, and the subject was allowed to stray off-topic. An interview guide was used, with questions to be asked over the course of the interview (see Appendix A). Interviews ranged from 29 to 102 minutes.

Recordings were completed with a Marantz RC300 digital CD recorder using either lapel microphones or tabletop microphones. The recording equipment was monitored by the interviewer throughout the interview to prevent peak clipping and ensure a high signal-to-noise ratio. Interviews were transcribed orthographically using conventions adapted from Du Bois (1991; Appendix B). The interview audio for some speakers in the YT sample had a relatively low signal-to-noise ratio, and it was not possible to analyze formants reliably for these speakers. As such, acoustic analyses were only conducted with the interview data for which reliable formants were visually identifiable in Praat (the number of transcripts used is listed individually for each analysis below).

6.2.3 *Vowel classes for analysis*

Vowel classes and subclasses were identified for measurement and analysis. For the vowel analysis of dialects such as PNW English, and in particular AAL in the PNW, where the phonological systems of these dialects are not fully attested, it is necessary to have a set of initial hypotheses concerning the phonology of the target language variety, including the presence of any exceptional word classes in the dialect. Di Paolo et al. (2011) note that it is important to keep vowel tokens in different phonetic environments separate for analysis purposes until it is clear a particular vowel does not operate differently in different phonetic environments. Therefore, vowels which are known to act differentially by phonetic environment in other varieties of US English are analyzed according to their phonetic environment, to ensure accurate grouping of phonological classes. The following initial hypotheses regarding the phonological system of the sample were posited:

- Pre-nasal /ɪ/ and /ɛ/ are likely to pattern differently than non-prenasal /ɪ/ and /ɛ/ (Thomas 2001, Labov et al. 2006, Scanlon & Wassink 2010).
- /a/ and /ɔ/ classes may be merged or distinct (Reed 1952, Labov et al. 2006, Wassink et al. 2009, Wassink 2015, Wassink 2017).
- /ʊl/ and /ol/ may pattern differently than non-prelateral /ʊ/ and /o/ (Di Paolo & Faber 1990; Squizzero 2009; McLarty, Kendall, & Farrington, 2016; Stanley, 2017).
- Pre-velar /æŋ/ and /ɛŋ/ may pattern differently than non-prevelar /æ/ and /ɛ/ (Wassink et al. 2009, Wassink 2015, Wassink 2017).
- Pre-nasal /æN⁴/ and pre-voiceless velar /æk/ may pattern differently than /æ/ (Wassink et al. 2009).
- /u/ before coronal consonants (hereafter, /u[+cor]) is likely fronted relative to non-precoronal /u/ (Labov et al. 2006); /ʊ/ is fronted but /o/ is not fronted (Wassink 2017).
- /aɪ/ may pattern differently before voiced obstruents, voiceless obstruents, nasals, liquids, and in open syllables (Nguyen 2006, Thomas 2001, Thomas 2007, Scanlon & Wassink 2010, Oxley 2015).

⁴ N is used here and below to denote all nasal environments (i.e., /m n ŋ/).

Additionally, tokens of /i/ and /u/ were measured, because these vowels are suspected to be stable, unshifting vowels which may be used as anchor vowels for visual analysis of vowel plots (see Di Paolo et al. 2011).

Certain phonological environments and word types were avoided for measurement and analysis. For most vowel classes, pre-liquid tokens were excluded from analysis, for two reasons. First, the methodological problem of deciding where the vowel ends and the liquid begins is not straightforward; and second, “liquids often inhibit the fronting of back vowels, and cause lowering of F2 for front vowels” (Di Paolo et al. 2011, p. 87, also see Labov 1994). Pre-lateral /o/ and /ʊ/ were examined, though, because Squizzero (2009) and Stanley (2017) note that the two pre-lateral classes may be spectrally merged in Washington State, and tokens of pre-liquid /aɪ/ were included in the auditory analysis of /aɪ/ vowels. Function words were not included for measurement or analysis (Di Paolo et al. 2011). Appendix C shows the distribution of vowels by vowel class and by speaker.

6.2.4 *Vowel measures*

Stressed vowels in mono- and bisyllabic words were extracted from the conversation. No more than 3 tokens per word were extracted for each speaker; if more than 3 tokens of a single word were found in a speaker’s transcript, the first three beyond the 10-minute mark of the interview were extracted and measured. Most vowels with adjacent glides and liquids were excluded from analysis; the exception, due to low token counts, were /æ/ and /ɛ/ vowels with following voiced velars and preceding liquids (e.g., *rag*, *leg*). 175-442 (mean=256) vowels were extracted from each speaker. A total of 4864 tokens were extracted from the YT interviews. Vowels were measured for the first three formant frequencies (F1, F2, and F3) at the 0% (start), 20%, 50%, 80%, and 100% (end) points of the vowel, using an automated script in Praat (Boersma & Weenink 2012).

Vowel start and end measures were not used for analysis, because coarticulation with flanking consonants may influence the spectral features of vowels at these points (Lehiste 1970).

Coarticulation effects may affect any portion of the vowel, but the use of 20%, 50%, and 80%

measurement points in analysis minimizes the effect of coarticulatory effects, while ensuring that dynamic spectral features of a vowel may be documented. Throughout the study, the 20% point of the vowel will be referred to, conveniently, as the vowel's *onset*. The 50% point will be referred to as the vowel's *midpoint*. The 80% point will be referred to as the vowel's *offset*. The onset and offset represent points in the vowel that are close to the start and end of the vowel, yet distant enough from the vowel edges to remain relatively unaffected by any coarticulatory effects of flanking consonants. The midpoint represents the mathematical point in the vowel which is most distant, and thus most distinct, from any coarticulations due to flanking consonants.

Such measures, independently, reflect only static features of the vowel. To reflect the trajectory (or change in vowel quality) over the duration of the vowel, measures which could reflect vowel quality change were also taken. Change in F1 ($\Delta F1$ hereafter) and change in F2 ($\Delta F2$) were calculated by subtracting formant values at the 20% point from formant values at the 80% point. Euclidean distance for individual vowel tokens was calculated using the following formula (Fabricius 2007):

$$\sqrt{(\Delta F1)^2 + (\Delta F2)^2}$$

Since Euclidean distance is a composite statistic reflecting movement distance between vowel measurements at F1 and F2 at two points in time, it is interpreted here as a rough measure of a vowel's trajectory.⁵ Monophthongal vowels will show smaller Euclidean distances, while distances will be larger for vowels (diphthongs) that begin in one part of acoustic vowel space and end in another. A plot showing the location of the vowel in the acoustic space (F1=y, F2=x) at 20% together with the Euclidean distance (visible as a line with length and an arrowhead showing direction of change) makes the direction of the vowel's spectral change (interpreted here as gliding) apparent. Euclidean distance (hereafter, a vowel's *trajectory*) is thus a useful

⁵ While Euclidean distance as a statistic may be used to convey the distance between any two points in a two-dimensional plane, its use here will be limited to methods consistent with this interpretation, as opposed to, for example, measurement of the distance between midpoints of two separate vowel classes.

statistic in cases where it is not clear whether F1 or F2 differentiate a pair of vowel categories, or when it is likely that both F1 or F2 serve to differentiate a pair. *Degree of gliding* is used in this dissertation to refer to the size of movement for an individual vowel or vowel class along F1, F2, or the vowel's trajectory. Additionally, vowel duration (in seconds, from vowel onset to vowel offset) was measured.

6.2.5 Coding

Tokens were coded for a number of interlocutor factors, using the Akustyk plugin in Praat (Plichta 2009). Social factors of speaker, speaker gender (male or female), and interlocutor ethnicity (African American or European American, as self-identified by the interlocutor during the interview) were coded for each token. Vowel class ([i ɪ e ε æ ɑ ɔ o ʊ u ɔɪ]) was coded for each token. The preceding and following phonetic environments were coded for phone, voicing (voiced, voiceless, or none), place of articulation (bilabial, labiodental, dental, alveolar, post-alveolar, lateral, velar, glottal, or none), and manner of articulation (stop, fricative, affricate, liquid, glide, nasal, or none). [ɔɪ] vowels were classified according to following environment (voiced obstruent, voiceless obstruent, nasal, liquid, or open vowel).

Speakers were also coded as “familiar” or “non-familiar” to the interviewer on the basis of interview content. An interlocutor was considered familiar if there was some evidence of a shared history between the interviewer (Jean Harris) and the interlocutor as Yesler Terrace residents within the interview, in the form of shared knowledge of common experience. The exchanges in (1-3) are examples of exchanges between Jean and familiar interlocutors, demonstrating a shared history:

the guys that lived in the Yesler Terrace - [JH: c'mon now @ c'mon now] @- they would not let the guys outside of the Terrace, come up there, to be with the girls in the Yesler Terrace [JH: I was wondering when you were gonna get to that, cause you were X one of the main ones, when those boys from the, uh service, go ahead now] (YT11, 00:40:23-00:40:49)

um, you were [name]'s tutor - and, you came to the house after you had tutored [name] and you said, <Q I'm gonna take him on the airplane ride Q>, and I said, huh? you know I was like, what? and you were an airline stewardess at that time - (YT2, 00:41:47-00:42:07)

[JH: do you remember either Gary Locke or Jimi Hendrix? from when you were growing up?] Jimi Hendrix went to school with us, remember? [JH: right, I know] (YT10, 01:06:15-01:06:24)

6.2.6 Normalization

The /aɪ/ and PIN-PEN data were normalized in order to facilitate between-speaker analysis, using Nearey's (1978) formant-intrinsic method.⁶ All formant data were log-transformed. Then, the log-mean for each formant (F1, F2), for each speaker, was calculated. The log-transformed formant values were subtracted by the relevant log-mean (e.g., F2 values for a particular speaker were subtracted by the F2 log-mean for that speaker – what Wassink (2006) refers to as a speaker-intrinsic grand mean). This normalization method scales the data to account for human physiology. The logarithmic scale reflects more accurately than a linear (Hz) scale the sensitivity of the human ear to changes in frequency (e.g., humans perceive a change of 100 Hz in a low-frequency range as a larger change than 100 Hz change in a high-frequency range). The range of formant values for any two speakers may be different, due to differences in vocal tract physiology. The log-mean formant values are used as a correction factor, making the center of acoustic space (i.e., mean F1 by mean F2) for all speakers equivalent, and defining the formant data in terms of distance from the speakers' respective centers of acoustic space (i.e., the center of each speaker's formant space is represented by the normalized coordinates [F2=0, F1=0]).

6.2.7 Analysis

Statistical tests were conducted in R (R Development Core Team 2012) as needed; these include the Student's t-test, Pearson's correlation, and logistic and linear regressions. Bonferroni corrections (Agresti & Finlay 1997) were applied to counteract the problem of multiple comparisons. For instance, if 38 t-tests were run for the sample of subjects, a t-test needed to return a p-value of < 0.001 to be considered significant; a p-value of < 0.003 was considered a near-significant result.

⁶ See Watt & Fabricius (2011), and Adank et al. (2004) for in-depth descriptions and comparison of Nearey normalization and other normalization methods.

Regressions were performed in analyses accounting for multiple factors, where I had statistical power to conduct them. Multivariate analyses like regressions allow for the examination of the effects of multiple factors simultaneously. For instance, in the /aɪ/ analysis, I am primarily examining differences in /aɪ/ production by ethnicity, but also want to account for other speaker factors, like gender, and vowel-specific factors, such as vowel duration. Accounting for additional factors is especially important for this observational data set, as it has unequal distributions of classes within the data set (for instance, interviews with female interviewees were longer on average and had higher word counts than those for male interviewees, so the data set includes more vowel measures from female speakers than from male speakers). Also, a multivariate analysis allows for the testing of interactions between factors. An interaction is a case “where the variant frequency observed for some combination of factors cannot be adequately predicted by combining the modeled main (or average) effects of the coded factors in that environment” (Sigley 2003, p. 229). For instance, if there is an interaction between ethnicity and gender, then the inclusion of an interaction term in the regression would account for this interaction. The best-fitting regression models were selected using a step-up step-down analysis, comparing Akaike’s information criterion (AIC) and Bayesian information criterion (BIC) for competing models. Stepwise regression is a parsimonious solution for the problem of model selection and is commonly used in variationist sociolinguistic research (Tagliamonte 2006). Selecting an appropriate regression model is based on two competing analyses needs. First, to provide realistic estimates for a predictor variable, we want to include as many variables as possible that are correlated with the predictor variable in question (goodness of fit). Second, for a given analysis we want to include as few variables as possible (parsimony), because each irrelevant predictor variable decreases the precision of the estimated coefficients and predicted values. While the inclusion of model variables should be based on theory and experience where possible, for complex and/or exploratory analyses there may not be much guidance on which variables to include, particularly for models with a large number of predictor variables. AIC and BIC are commonly used measures of model quality used for model selection. Both model selection criteria are penalized likelihood criteria; they assess goodness of model fit to the observed data, and additionally penalize models with larger numbers of terms (discouraging overfitting models). The smaller the values for each statistic, the lower the risk of overfitting and underfitting the model. BIC can be considered a somewhat more conservative measure for model

fit, since it penalizes additional variables more heavily than AIC (Burnham and Anderson 2004). Stepwise regression is conducted in two phases. First, step-up selection starts with the null model. In the first step, it adds the variable that minimizes both AIC and BIC. In each subsequent step, it adds the next-best variable (i.e., the variable that minimizes AIC and BIC), until adding extra variables does not improve model fit. Second, step-down selection begins with the best-fitting model from the step-up procedure, and tests the deletion of each variable, and drops the variable if deleting the variable results in a deterioration of model fit (i.e., higher AIC or BIC). Step-down selection continues iteratively until no further variables can be deleted without a statistically significant loss of fit (i.e., increase in AIC or BIC).

6.3 ANALYSES BY VARIABLE

6.3.1 *PIN-PEN*

6.3.1.1 Methods

The PIN-PEN analysis focused on the following broad hypotheses:

- For YT African American speakers, the PIN and PEN classes are spectrally merged at midpoint, while YT European Americans differentiate the two classes spectrally (based on Scanlon and Wassink 2010b).
- Degree of gliding differentiates the PIN and PEN classes for YT African Americans, but not for YT European Americans (based on Scanlon and Wassink 2010b).

Table 6.3 shows the distribution of the sample by ethnicity and gender for the acoustic analysis of PIN-PEN.

Table 6.3. Distribution of speakers for PIN-PEN acoustic analysis

	<i>Gender</i>	
	<i>Men</i>	<i>Women</i>
<i>European Americans</i>	3	1
<i>African Americans</i>	3	10

Exploratory plots were examined. PIN and PEN classes were plotted as trajectories of individual tokens, with BIT and BET as reference points. Boxplots were plotted for easy comparison of trajectory and duration between two vowel classes. The degree of overlap between the two vowel

classes was assessed. For visual comparison of the two classes, best-fit ellipses in F2-by-F1 space for each vowel class were modeled, and overlap fraction statistics were calculated (see Wassink 2006).

To investigate the effects of ethnicity on vowel position, regressions of vowel position (F1 and F2 at 20%, 50% and 80%) were modeled and summarized:

- $F1_{20} \sim \alpha + \beta_1 \text{subject ethnicity} * \beta_2 \text{vowel duration} * \beta_3 \text{vowel class} * \beta_4 \text{gender} + \varepsilon$ (error term)
- $F1_{50} \sim \alpha + \beta_1 \text{subject ethnicity} * \beta_2 \text{vowel duration} * \beta_3 \text{vowel class} * \beta_4 \text{gender} + \varepsilon$
- $F1_{80} \sim \alpha + \beta_1 \text{subject ethnicity} * \beta_2 \text{vowel duration} * \beta_3 \text{vowel class} * \beta_4 \text{gender} + \varepsilon$
- $F2_{20} \sim \alpha + \beta_1 \text{subject ethnicity} * \beta_2 \text{vowel duration} * \beta_3 \text{vowel class} * \beta_4 \text{gender} + \varepsilon$
- $F2_{50} \sim \alpha + \beta_1 \text{subject ethnicity} * \beta_2 \text{vowel duration} * \beta_3 \text{vowel class} * \beta_4 \text{gender} + \varepsilon$
- $F2_{80} \sim \alpha + \beta_1 \text{subject ethnicity} * \beta_2 \text{vowel duration} * \beta_3 \text{vowel class} * \beta_4 \text{gender} + \varepsilon$

6.3.1.2 Results

Figure 6.1 shows F2-by-F1 vowel plots of the PIN and PEN classes (in yellow and blue, respectively) for 13 African American YT speakers, with BIT and BET means as reference points (in green and red, respectively). All speakers show strong overlap between the two classes, and there does not appear to be a consistent direction to the vowel trajectory for either class. T-tests of PIN and PEN at vowel onset, midpoint, and offset yield mostly non-significant results; Speaker 5, however, shows a higher PIN than PEN at vowel offset ($p=6.48e-04$; full t-test PIN-PEN results can be found in Appendix D).

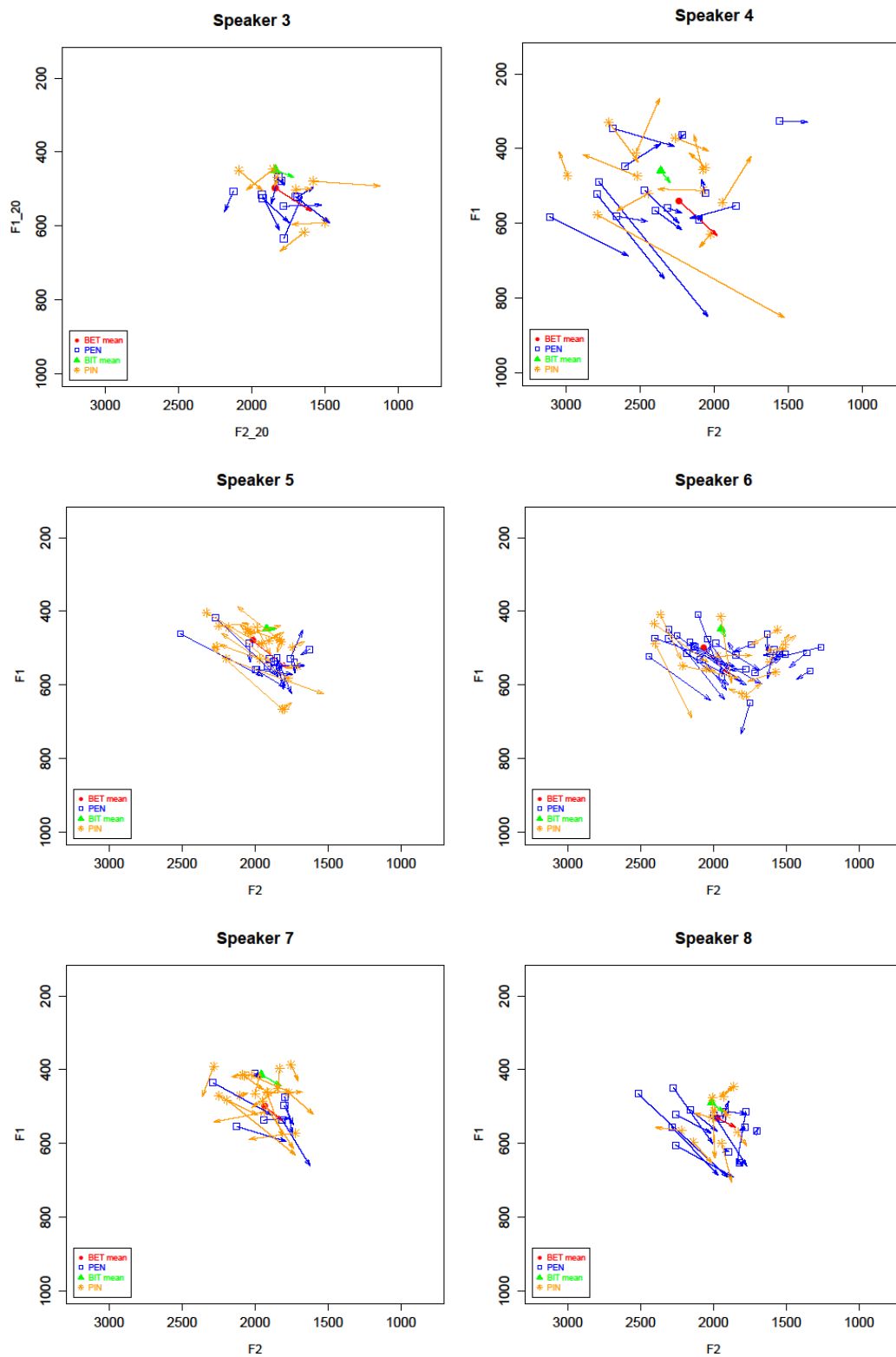


Figure 6.1. PIN and PEN trajectories for African American subjects

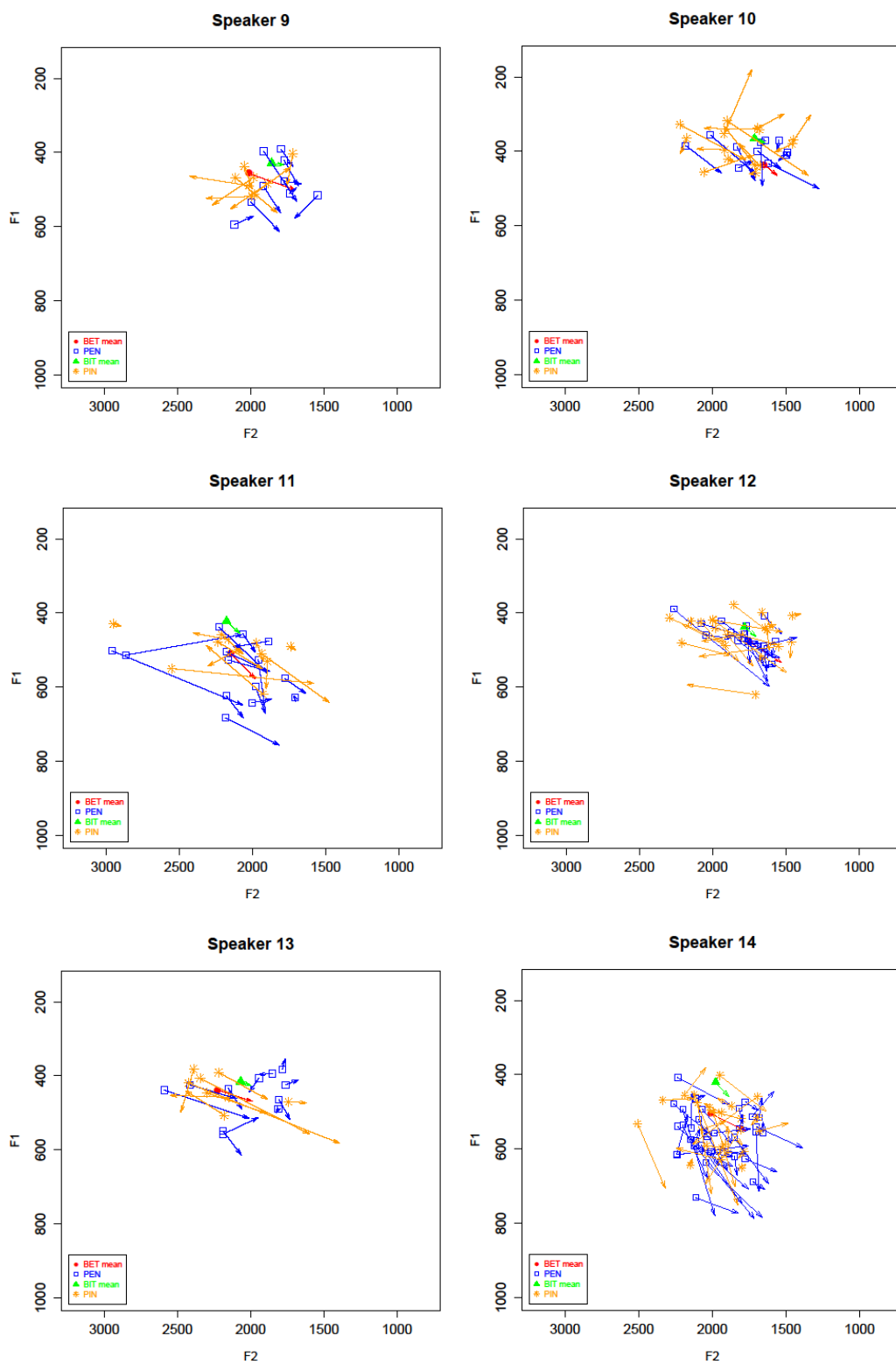


Figure 6.1 (cont). PIN and PEN trajectories for African American subjects

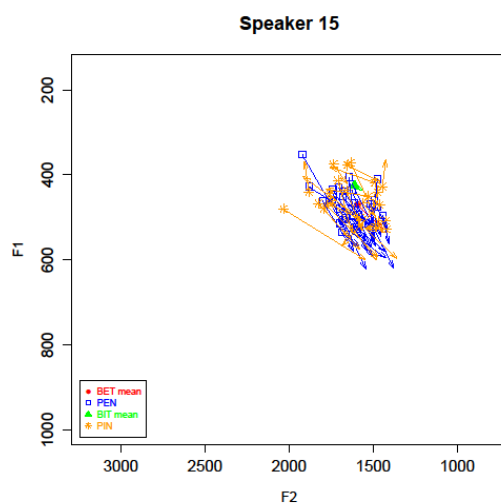


Figure 6.1 (cont). PIN and PEN trajectories for African American subjects

Figure 6.2 shows F2-by-F1 plots of the PIN and PEN classes for 4 European American YT speakers, with BIT and BET means as reference points. 3 of the 4 speakers show strong overlap between the two classes. For Speakers 18 and 19, the two vowel classes were not found to be significantly different along F1 or F2 for any part of the vowel. Speaker 16 shows a higher PIN than PEN at vowel offset ($p=0.0017$). For Speaker 17, PEN has a significantly higher F1 than PIN at vowel onset ($p=4.76e-05$) and at vowel midpoint ($p=4.19e-04$).

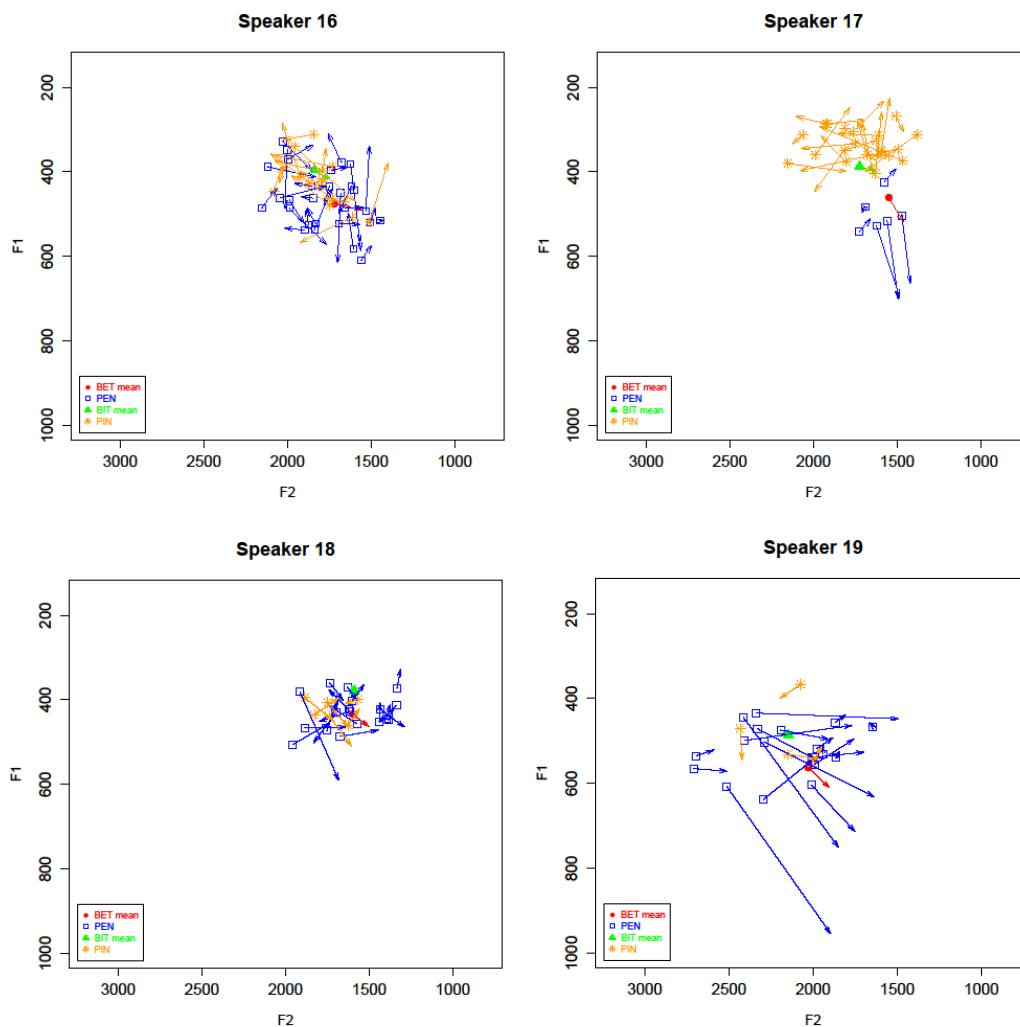


Figure 6.2. PIN and PEN trajectories for European American subjects

Figures 6.3 and 6.4 compare the trajectory and duration, respectively, for the PIN and PEN classes by speaker for the YT sample. No consistent pattern of trajectory length or duration was observed, and the two classes were not found to vary in trajectory length or duration for any speaker.

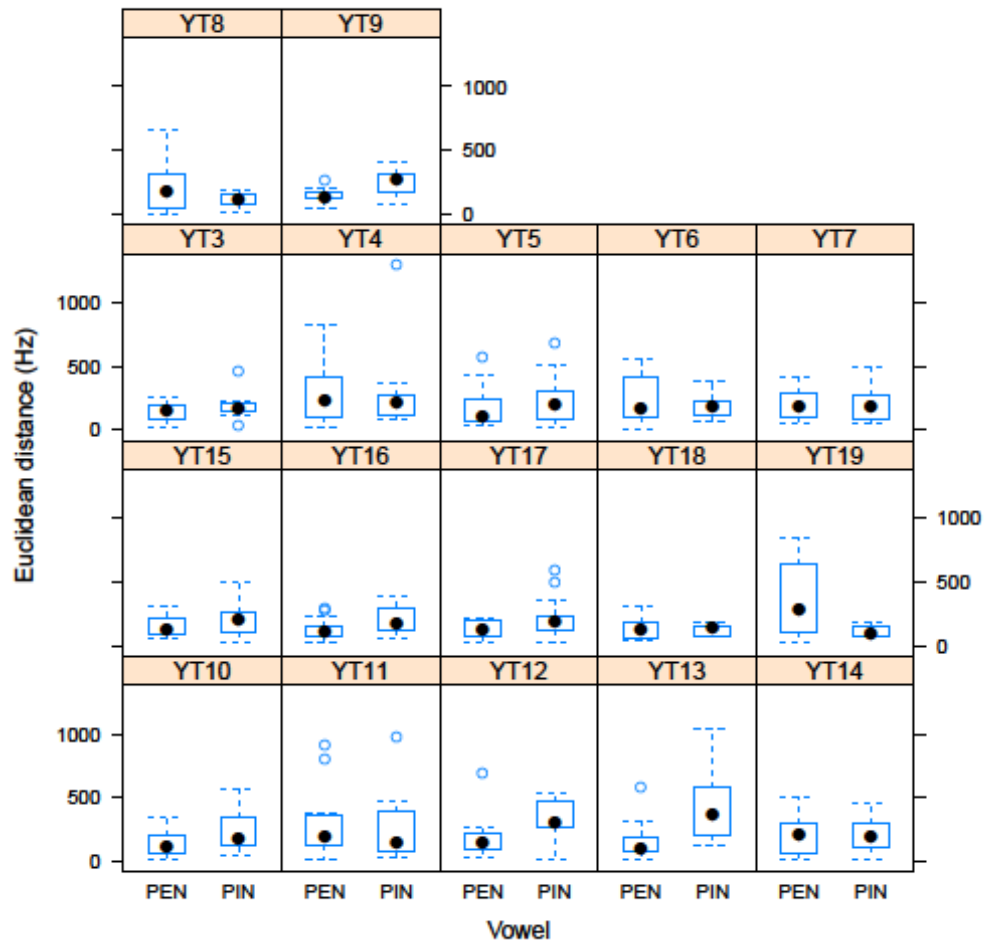


Figure 6.3. Trajectory boxplot of PIN and PEN classes, by YT speaker

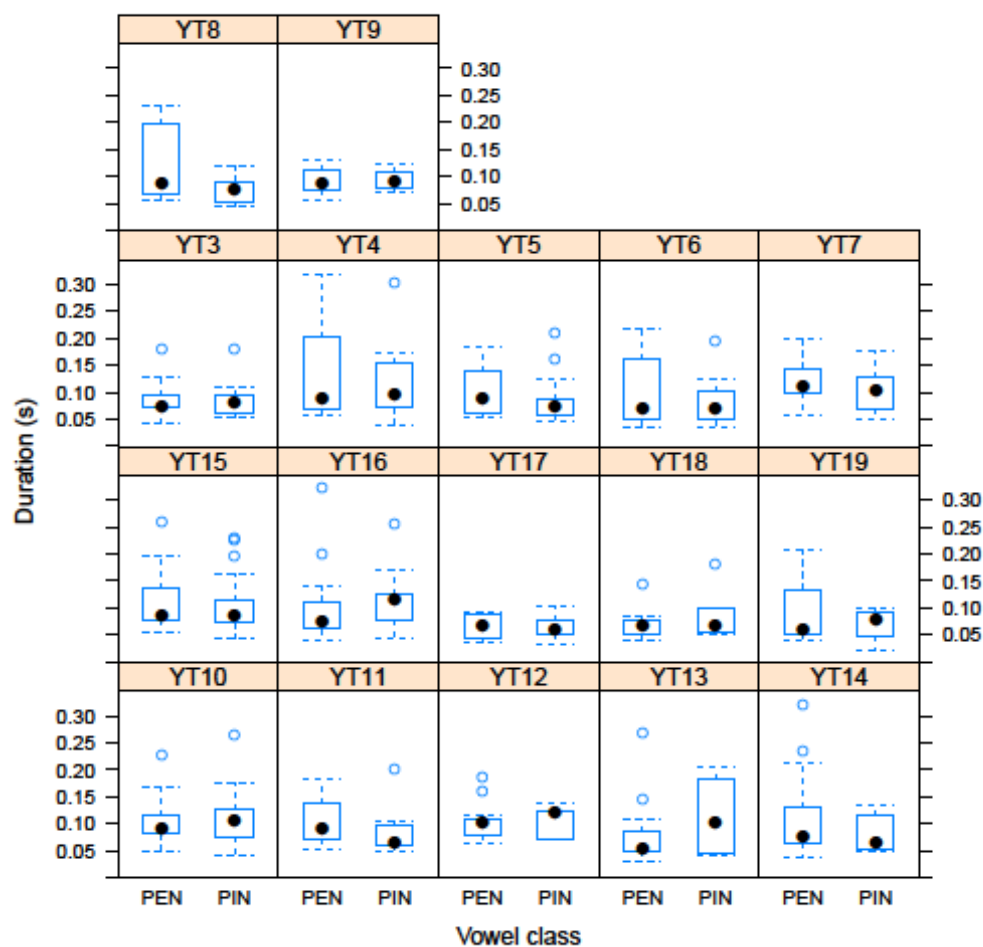


Figure 6.4. Duration boxplot of PIN and PEN classes, by YT speaker

Figure 6.5 shows best-fit ellipses for the PIN and PEN classes for YT African American speakers, using F2 and F1 at vowel midpoint. All of the YT African Americans show strong overlap between the PIN and PEN classes; F1-by-F2 overlap statistics range from 0.52 to 0.99 (mean=0.80, $sd=0.17$).

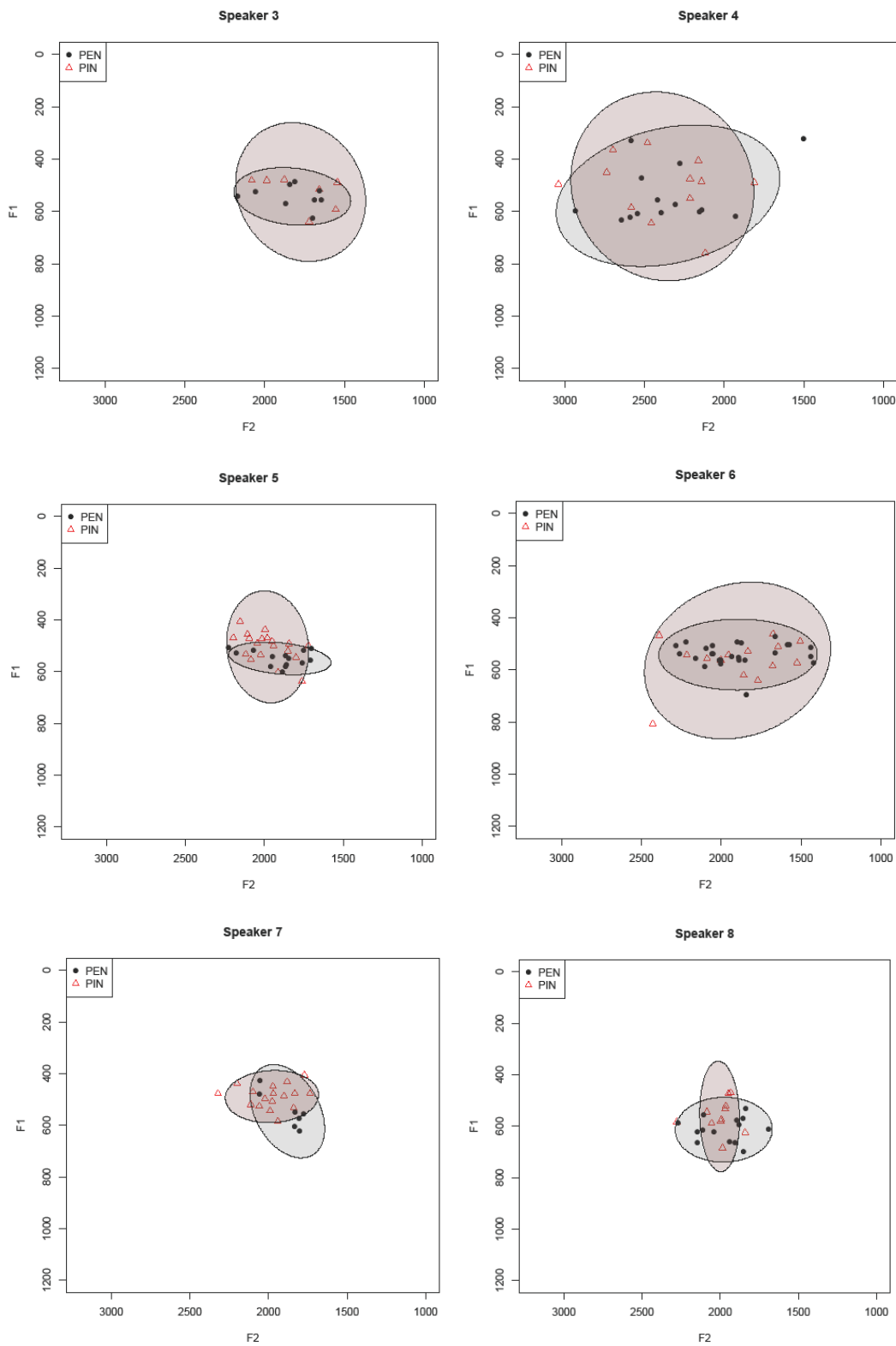


Figure 6.5. Best-fit ellipses for PIN and PEN, for African Americans

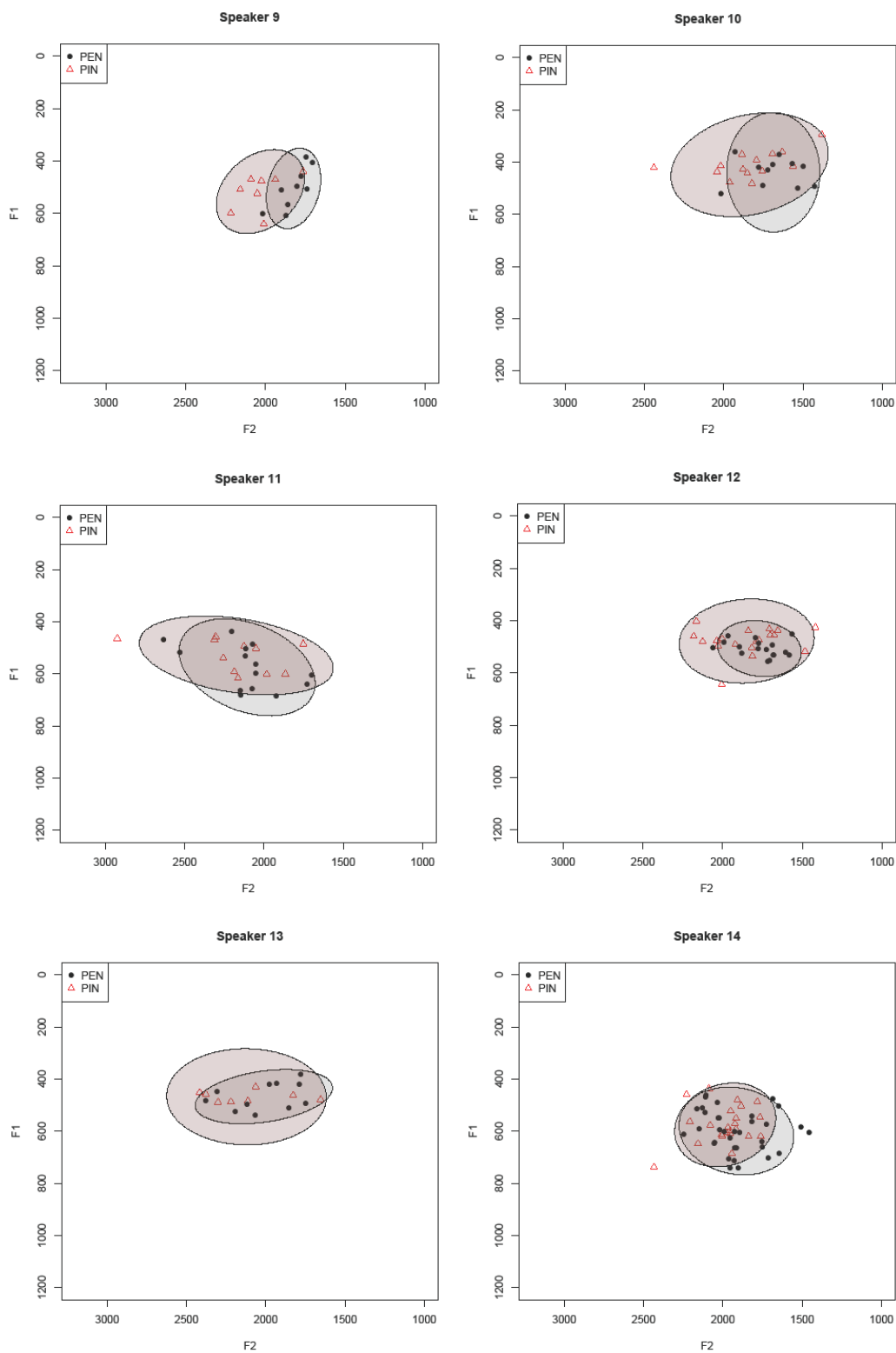


Figure 6.5 (cont). Best-fit ellipses for PIN and PEN, for African Americans

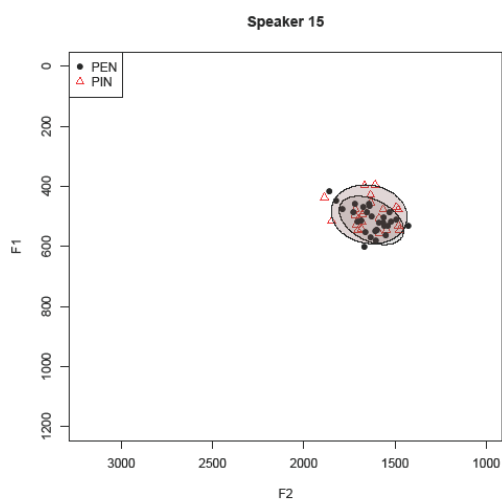


Figure 6.5 (cont). Best-fit ellipses for PIN and PEN, for African Americans

Figure 6.6 shows best-fit ellipses for the PIN and PEN classes for YT European American speakers, using F2 and F1 at vowel midpoint. The European American speakers also tend to show strong overlap between the two vowel classes, with the exception of Speaker 17, for whom PIN and PEN do overlap (F1-by-F2 overlap statistic for this speaker is 0.14), but remain distinct in their distribution. Overlap statistics for the other 3 European American speakers range from 0.67 to 0.99 (mean=0.88; $sd=.19$), and do not vary significantly from those of YT African Americans.

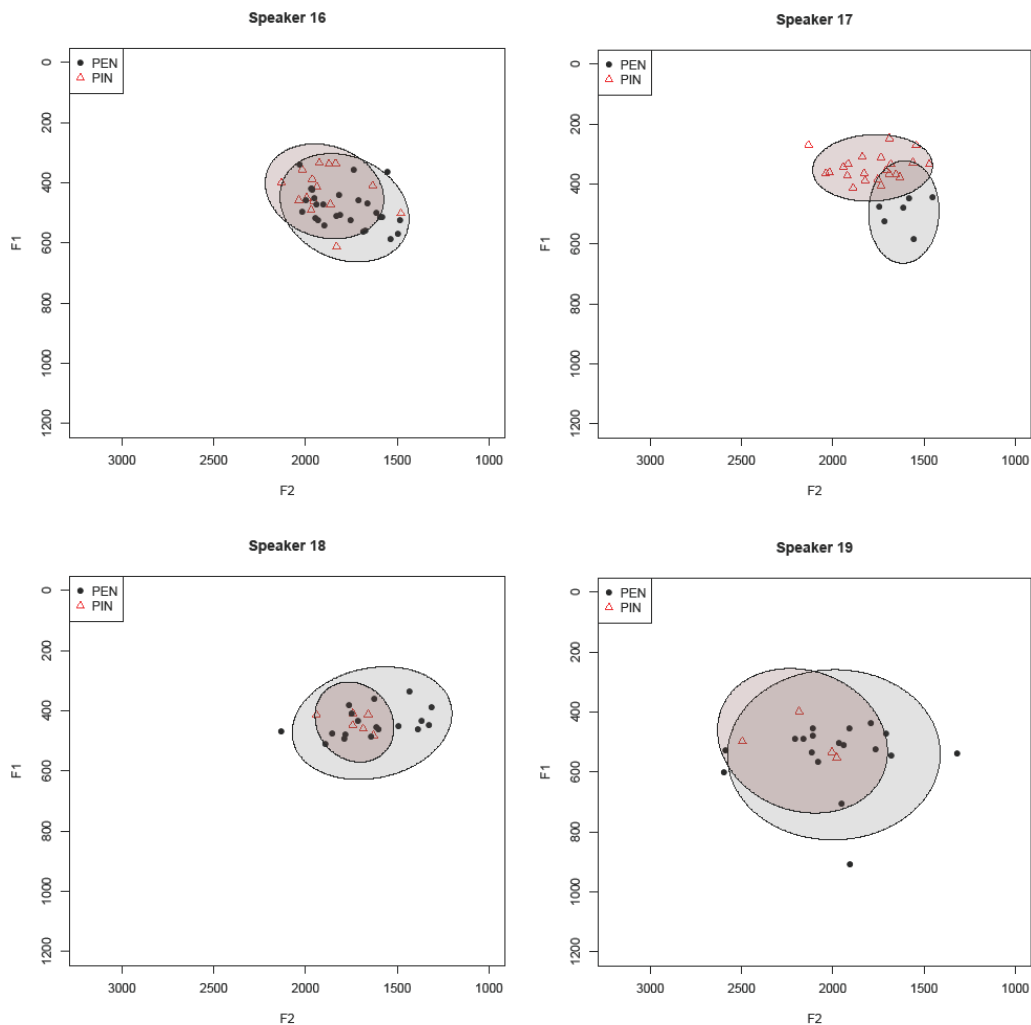


Figure 6.6. Best-fit ellipses for PIN and PEN, for European Americans

The regression analyses show some differences in PIN and PEN production by ethnicity and gender within YT. At vowel offset, the PIN class has a lower F1 than the PEN class ($p=0.000$). Throughout the vowel, YT European Americans have a lower F1 for the PIN class than YT African Americans ($p=0.000$ at onset, midpoint, and offset). The PIN class is fronter than the PEN class at midpoint ($p=0.000$) and offset ($p=0.000$). Women have a higher F2 at midpoint than men ($p=0.024$). European American women produce vowels with a higher F2 at onset ($p=0.016$), midpoint ($p=0.024$), and offset ($p=0.024$), holding other factors constant. Full regression results are given in Appendix D.

6.3.1.3 Summary

Most YT speakers show strong overlap between the PIN and PEN classes, and do not appear to differentiate between the two classes spectrally, through glide direction or length, or through duration. For a few YT speakers, though, PIN is higher (i.e., has a lower F1) than PEN at some point in the vowel.

For the sample as a whole, PIN and PEN tend to be differentiated towards the end of the vowel, with PIN higher and more fronted and PEN lower and more backed. YT European Americans have a higher PIN vowel than YT African Americans. YT women, particularly European American women, have more fronted PIN and PEN vowels than their male counterparts.

6.3.2 COT-CAUGHT

6.3.2.1 Methods

The analysis of COT and CAUGHT was centered on the following broad hypotheses:

- YT speakers vary in the degree of spectral overlap between COT and CAUGHT.
- YT African Americans show lexical fronting of some COT tokens.

The midpoints of each subject's COT and CAUGHT classes were plotted on an F2-by-F1 plot in R. The plots were visually inspected for clear cases of lexical outliers. *Got* was suspected to be lexically fronted for some speakers in the sample to a position near [æ], based on auditory analysis of *got* tokens during vowel measurement. If all of the given tokens of a given word were well outside the range of other /a/ tokens, as indicated by a significant t-test result of *got* F1s vs. other /a/ F1s, or *got* F2s against other /a/ F2s, then all tokens of that word were excluded from the analyses below.

Figure 6.7 gives an example of a vowel plot with lexically fronted and raised *got*. In the figure, the center of each word represents a vowel tokens F1 and F2 values at midpoint. All tokens of *got* have a lower F1 ($t = -8.57$, $p = 1.36e-06$) and higher F2 ($t = 8.26$, $p = 5.52e-07$) at midpoint than the other vowels in the /a/ class.

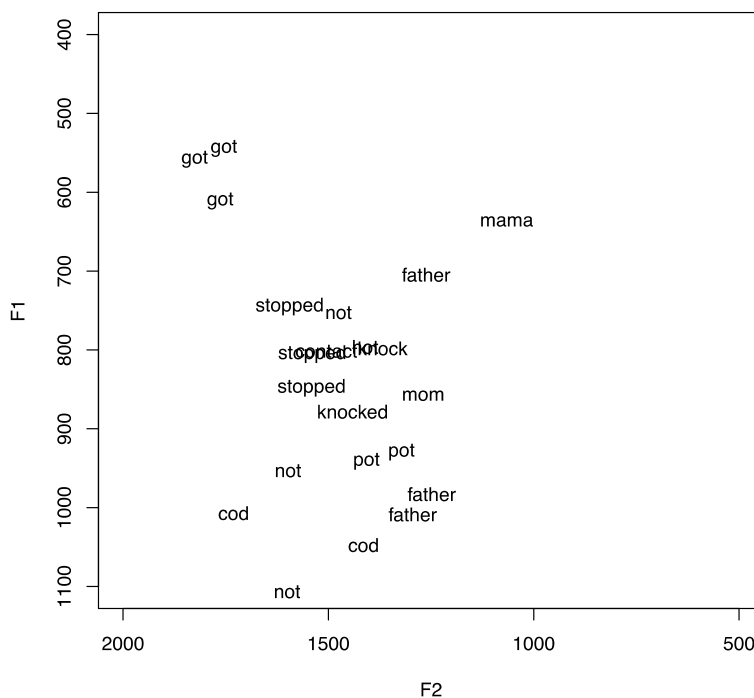


Figure 6.7. Example COT distribution, showing lexical exceptions

After excluding any tokens whose distributions were clearly outside of the /a/ and /ɔ/ distributions, multiple aspects of the two vowel classes were compared. Vowel plots of each speaker were visually inspected, and t-tests comparing the size of the vowel trajectory for each of the two vowel classes were conducted. T-tests were run in R for F1 and F2 at vowel midpoint for each speaker, as were t-tests for duration. Two-dimensional (F1 & F2) overlap fraction statistics between the two vowel classes were calculated for each speaker (Wassink 2006).

The position of the COT and CAUGHT vowels was also considered as a variable. To discuss the position of the two vowel classes across speakers, it is necessary to normalize raw formant data into normalized values, as the range of formants an individual uses is determined partly by the size of the individual's vocal tract (see Adank et al. 2004). Mean F2 values were normalized for each vowel class α by using the following formula:

$$\frac{\text{Mean } /i/ F2 - \text{Mean } /a/ F2}{\text{Mean } /i/ F2 - \text{Mean } /u/ F2}$$

The formula yields a normalized mean /i/ value of 0.0 and a normalized mean /u/ value of 1.0. A higher number denotes a more backed vowel. This method is similar to known-extremes normalization (Shirai 2005). Normalized mean COT and CAUGHT values were compared between groups (YT European American and YT African American) via t-tests.

6.3.2.2 Results

Comparison of the COT and CAUGHT classes was conducted for 19 subjects. Table 6.4 gives a summary of the demographic makeup of the sample.

Table 6.4. Distribution of speakers for COT-CAUGHT analysis

	<i>Gender</i>	
	<i>Men</i>	<i>Women</i>
<i>YT European Americans</i>	3	1
<i>YT African Americans</i>	4	11

Of the 19 speakers analyzed for the COT-CAUGHT analysis, 9 speakers showed a lexically fronted or raised *got*. Differences between *got* and other /a/ tokens were found at the 20% point of the vowel (n=2), at the 50% point of the vowel (n=2), or both (n=5). 4 of 15 African American YT speakers displayed fronted and raised *got*, and 3 others displayed fronted *got*. One European American from the YT sample exhibited raised *got*, and 1 other YT European American exhibited fronted *got*.

Figure 6.8 shows the F2-by-F1 scatterplots and best-fit ellipses of COT and CAUGHT vowels at the vowel midpoint for 15 African American Yesler Terrace speakers.

⁷ /u/ represents only [u] vowels with preceding non-coronals. For speakers whose /u/ class was fronted, the most extreme backed vowel class (either /ol/ or /o/) was used in its place for the normalization procedure.

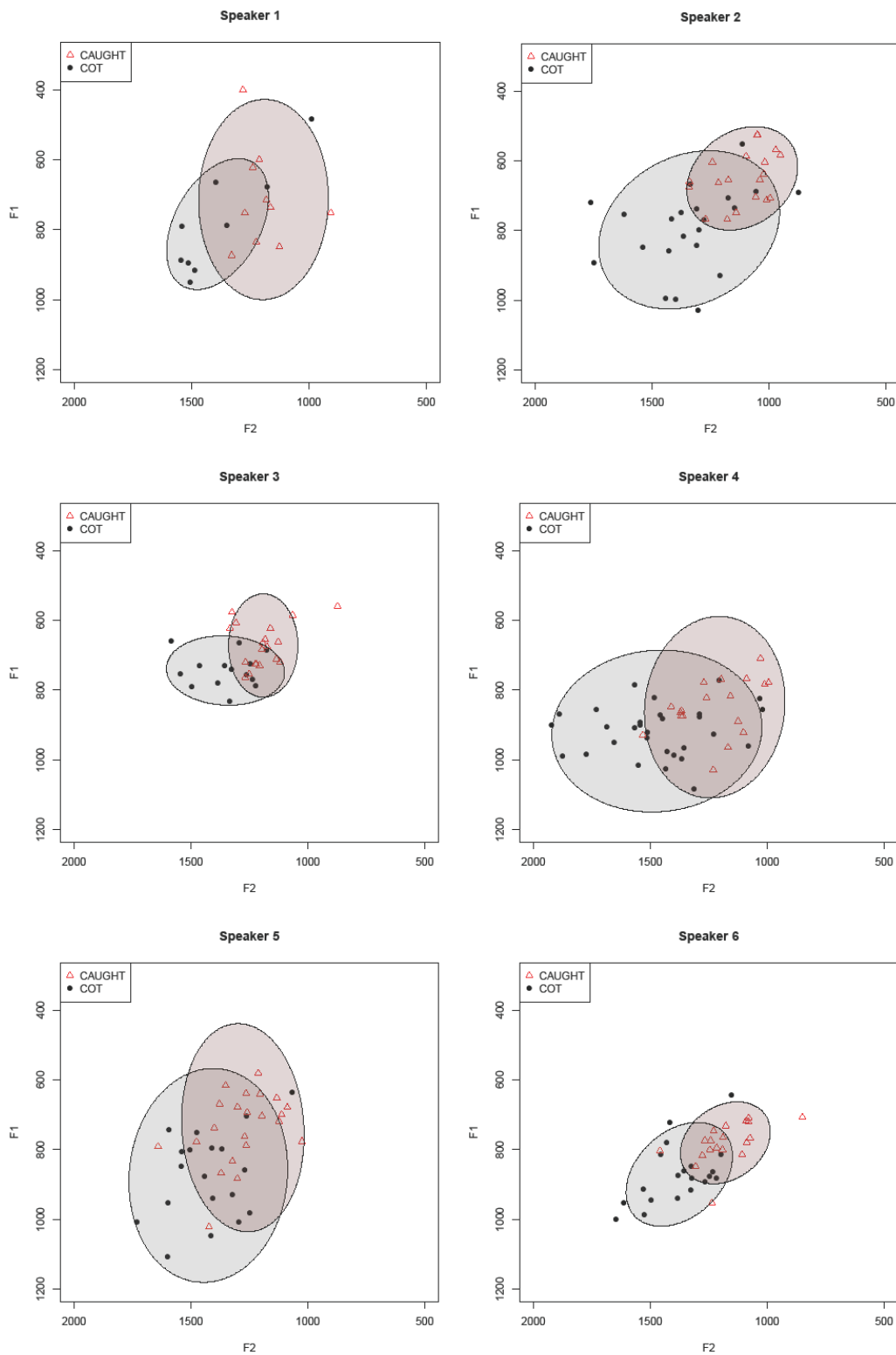


Figure 6.8. COT-CAUGHT best-fit ellipses for YT African Americans

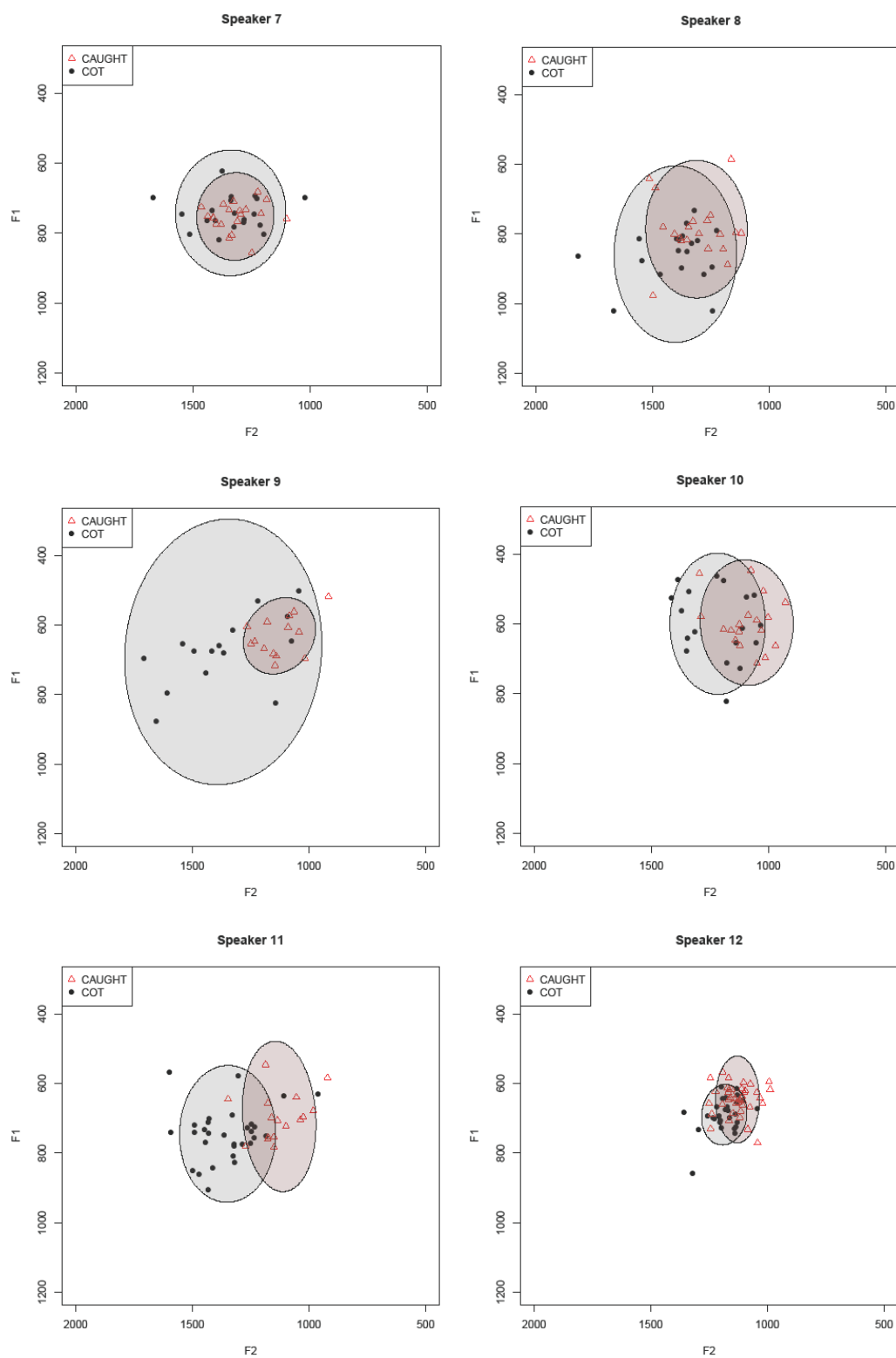


Figure 6.8 (cont). COT-CAUGHT best-fit ellipses for YT African Americans

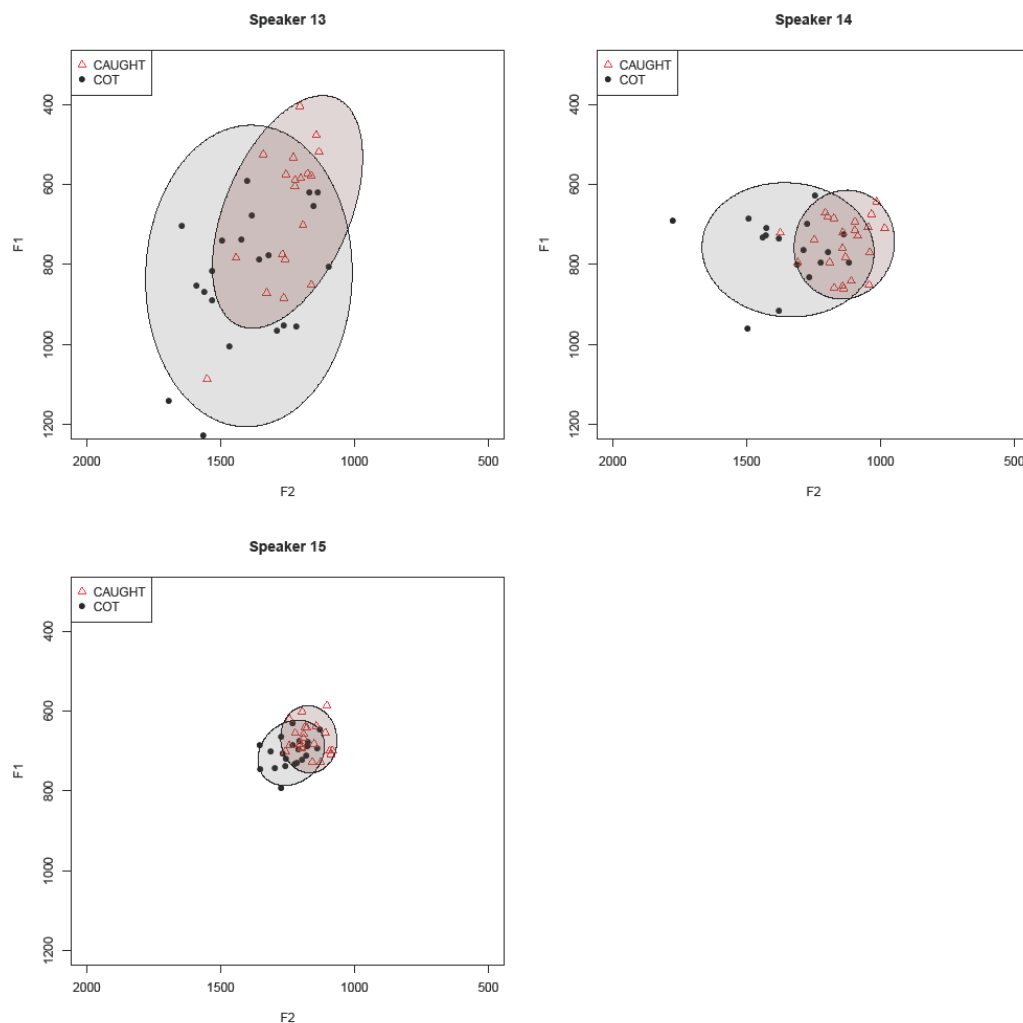


Figure 6.8 (cont). COT-CAUGHT best-fit ellipses for YT African Americans

For YT African Americans, COT had a consistently higher F2 than CAUGHT. 11 of 15 speakers showed a significant difference between the 2 classes along the F2 dimension. Additionally, 5 of 15 speakers had significantly lower (i.e., higher F1) cot vowels than caught. All together, 12 of 15 speakers were found to differentiate COT and CAUGHT production along some dimension. (Appendix E shows the results of the COT-CAUGHT statistical tests for all speakers.)

Figure 6.9 shows the F2-by-F1 scatterplots of /a/ and /ɔ/ vowels at the vowel midpoint for 4 European American Yesler Terrace speakers.

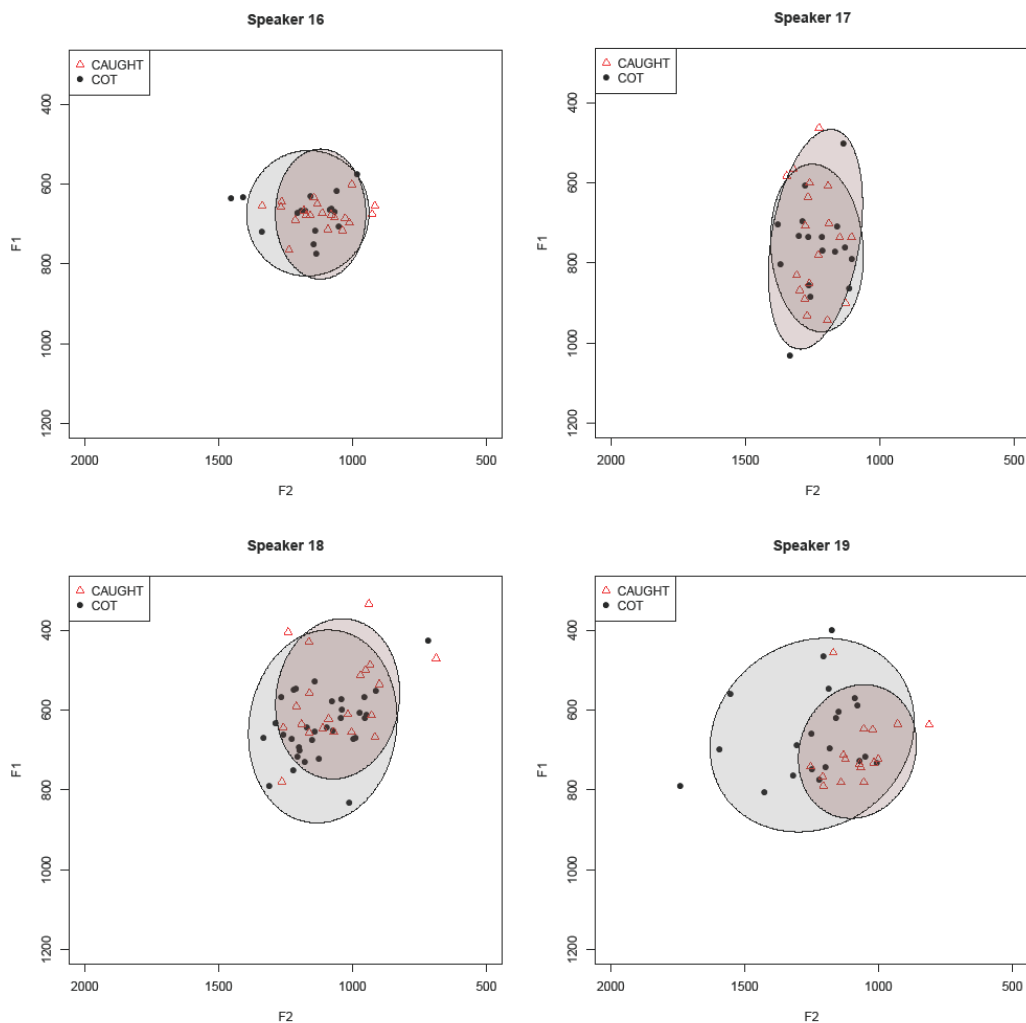


Figure 6.9. COT-CAUGHT best-fit ellipses for YT
European Americans

Three of four European American YT speakers show strong overlap between the COT and CAUGHT classes, with no significant differences found for F1 and F2 at midpoint. Speaker 19 appears to differentiate the two classes somewhat along the F2 dimension, with a more fronted COT. For that speaker, a near-significant difference between /a/ and /ɔ/ F2 was found ($t = 3.3916$, $p = 0.002$).

As observed above, African American YT members tended to distinguish the COT and CAUGHT classes spectrally, while YT European Americans tended not to distinguish between the two classes. The F1/F2 overlap analysis also shows lower percentages of overlap between the

two vowel classes for African Americans (mean=0.66, sd=0.16) than for European Americans (mean=0.96, sd=0.06; $p=0.000$), as shown in Figure 6.10.

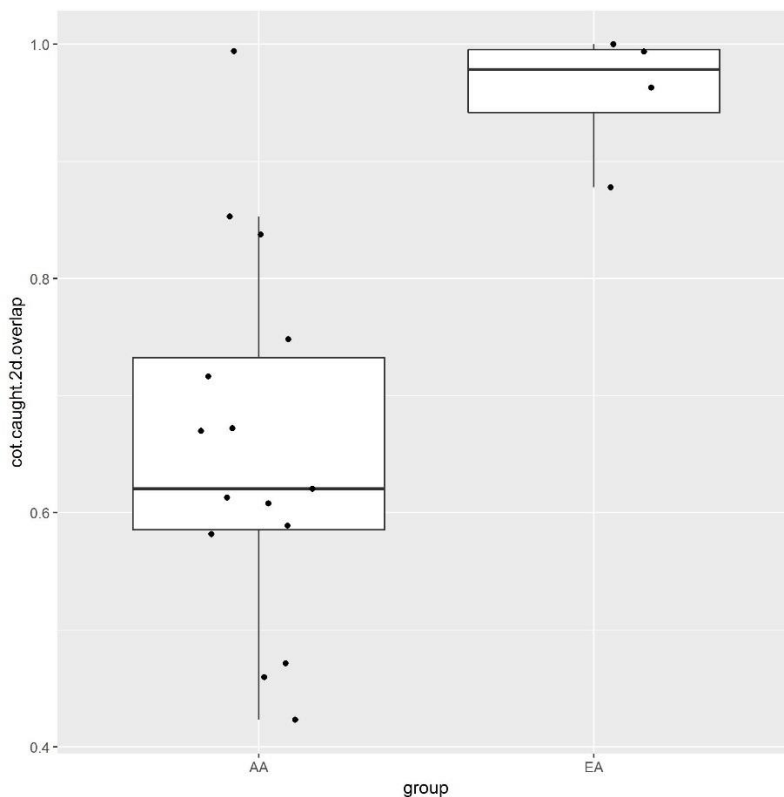


Figure 6.10. COT-CAUGHT spectral overlap percentage, by ethnicity

Low back vowel duration

Figure 6.11 shows the distribution of durations for the COT and CAUGHT classes by speaker. T-tests comparing the duration of the COT and CAUGHT classes for each speaker revealed no significant differences between COT and CAUGHT.

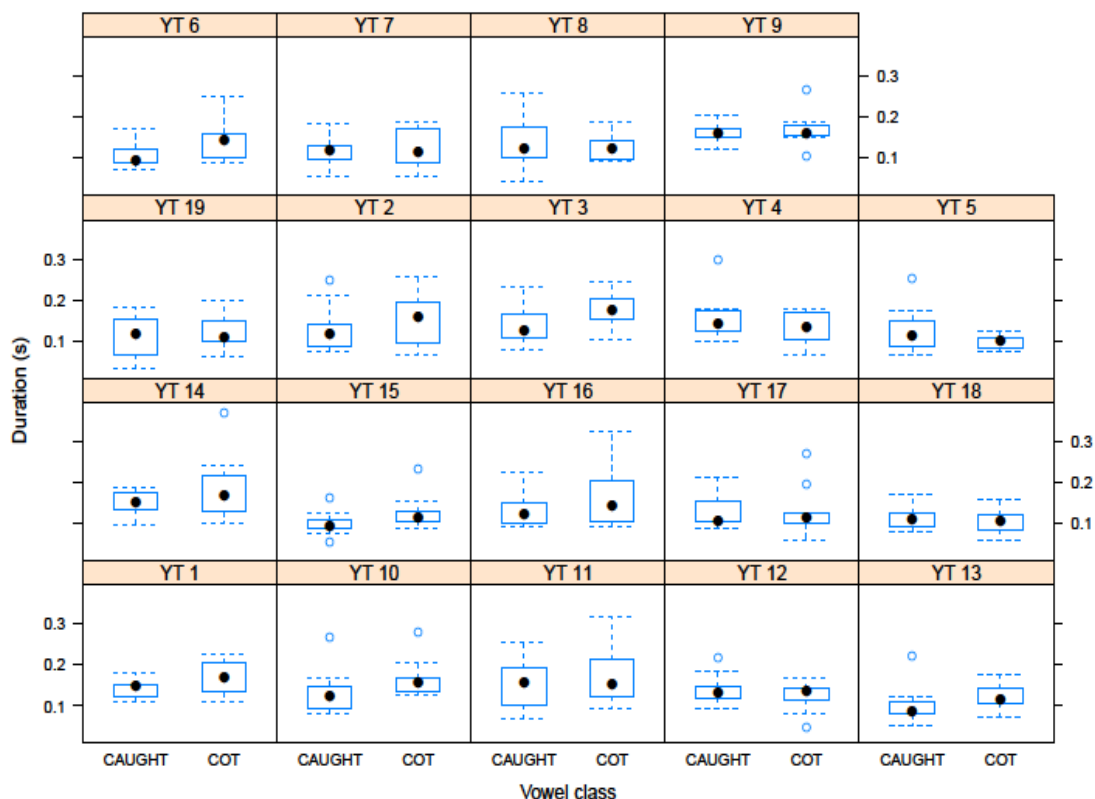


Figure 6.11. COT-CAUGHT duration boxplots

Low back vowel trajectories

Figure 6.12 shows the degree of gliding (Euclidean distance) for the COT and CAUGHT classes for each speaker, alongside the degree of gliding for the BEET and TOOT classes, respectively. BEET and TOOT were used as comparators because BEET shows little gliding for the entire sample (i.e., is essentially a monophthongal vowel) and /u/ after coronals shows moderate gliding for all speakers (i.e., appears to be a consistently diphthongal vowel). For all speakers, the COT and CAUGHT classes have glides comparable to those of BEET, and smaller than TOOT. The vast majority of speakers appear to have similar size glides for the COT and CAUGHT classes. While mean COT glides are consistently larger than CAUGHT glides for the entire YT sample, this difference was only found to be significant for one speaker (speaker 4).

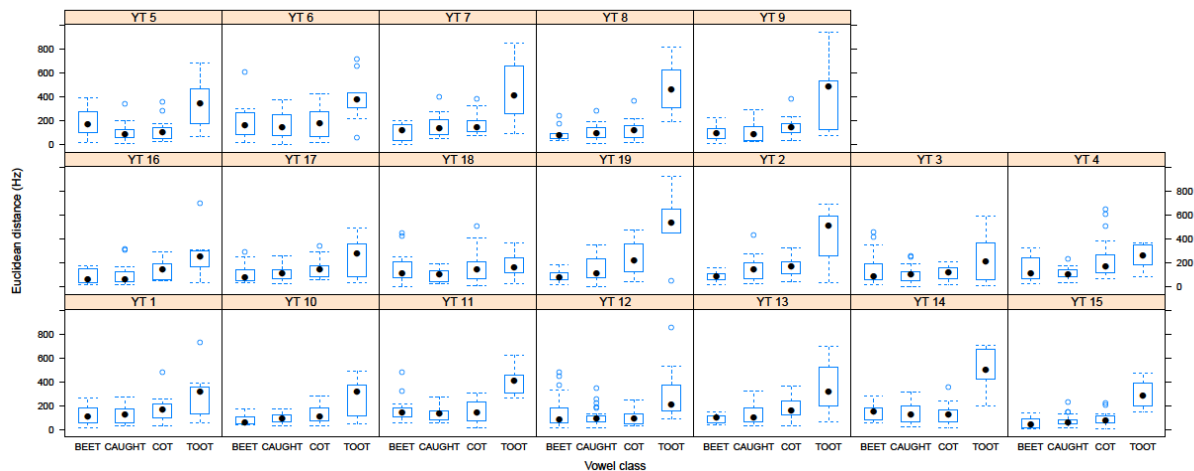


Figure 6.12. COT-CAUGHT degree of gliding

Visual inspection of each speaker's COT and CAUGHT trajectories was conducted. For most speakers (23/24), there was no consistent pattern of glide direction for either vowel class. Figure 6.13 shows an example plot of YT Speaker 10's COT and CAUGHT trajectories. For both vowel classes, there is no consistent directional pattern of gliding.

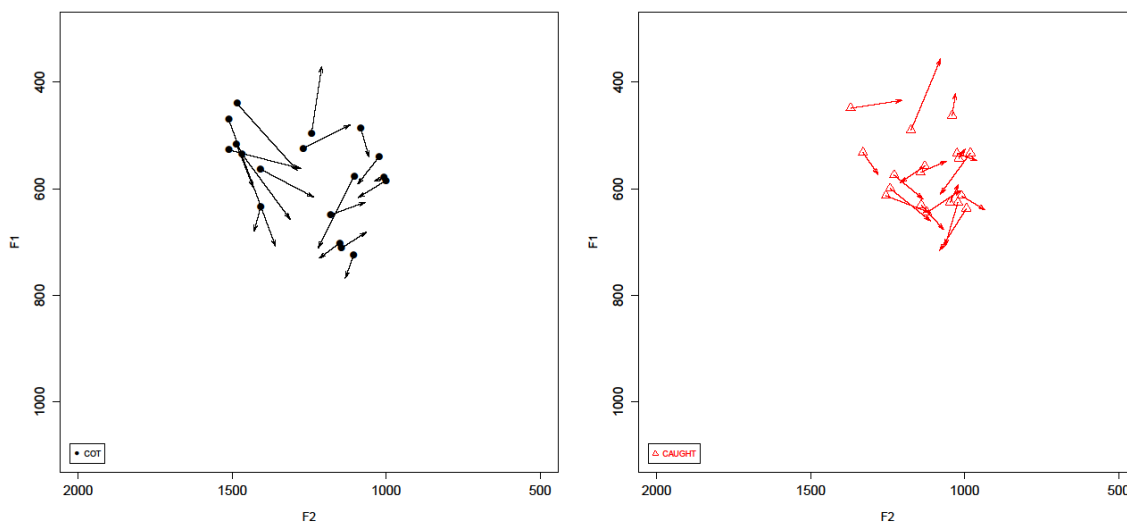


Figure 6.13. YT10 - COT-CAUGHT trajectories

While no speakers showed a consistent pattern of glide direction, 3 speakers, all from the YT African American sample, had several tokens with a strong COT inglide. Figure 6.14 demonstrates this ingliding tendency in Speaker 4.

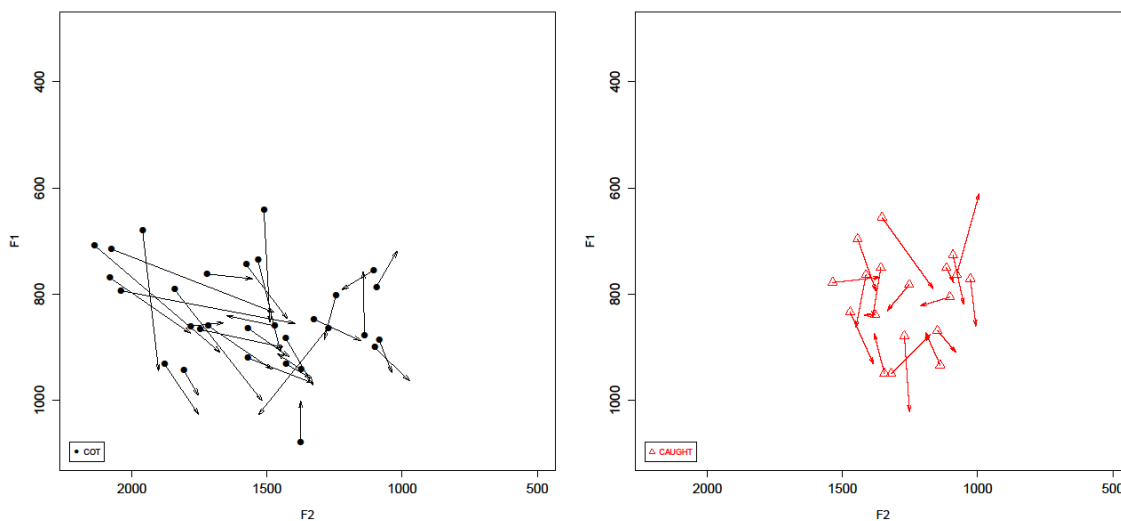


Figure 6.14. YT4 - COT-CAUGHT trajectories

Low back vowel position: Between-groups comparison

Table 6.5 shows the mean normalized COT and CAUGHT F2 values by group.

Table 6.5. Mean normalized /a/ and /ɔ/ F2 by group

Group	Mean COT F2 (normalized)	Mean CAUGHT F2 (normalized)
YT African American	0.785	0.904
YT European American	0.839	0.899

It does not appear that the African American YT speakers have more fronted /a/ or /ɔ/ vowels than European American speakers. T-tests comparing YT African American and YT European American speakers yielded non-significant results (for COT: $t=-0.972$, $p = 0.391$; for CAUGHT: $t=0.080$, $p=0.939$).

6.3.2.3 Summary

No speakers showed significant differences between the COT and CAUGHT classes in vowel duration, and only 1 of 24 speakers showed that the two vowel classes had statistically different trajectories. Vowel quality (F1 and/or F2) distinguished the two classes for 12 of 24 speakers. The study found, like many others, African American resistance to low back merger when it is widespread in European American comparators. Among African Americans in YT, there is a strong tendency for COT and CAUGHT to remain distinct at midpoint, primarily but not exclusively along the F2 dimension. There is some evidence that relative to European American speakers, African American speakers have slightly more fronted COT vowels. Additionally, 3 YT African American speakers show COT tokens that start out relatively fronted and have a strong inglide. However, lexical fronting or raising of *got* seems to be roughly equally prevalent among African American and European American YT members.

6.3.3 BULL-BOWL

6.3.3.1 Methods

The *bull-bowl* analysis was conducted with a smaller subset of YT speakers (n=9), because tokens of the /*o*/ class are relatively low-frequency in speech and tokens were not found in the data of the majority of speakers. Speakers who had 1 or more tokens in the /*o*/ class were considered for analysis. These included 7 African American speakers (Speakers 7, 8, 10, 11, 12, 13, and 15) and 2 European American speakers (Speakers 17 and 18). While the number of /*o*/ and /*ɔ*/ tokens is too small to conduct statistical analyses (e.g., t-tests, overlap statistics) for most speakers, vowel plots can be inspected individually for testing of the following broad hypotheses (after PNWE data in Squizzero, 2009):

- YT speakers have spectrally merged /*o*/ and /*ɔ*/ classes.
- For YT speakers, the /*o*/ and /*ɔ*/ classes are proximal to /*o*/ non-pre-laterally (i.e., are backed vowels).

By-speaker F2-by-F1 vowel plots showing the location and trajectories of tokens of the /*o*/ and /*ɔ*/ classes were graphed and analyzed, with mean /*u*/ and /*o*/ trajectories as reference points. Plots were not normalized, as within-speaker trajectory patterns were observed, and vowels were

not compared across speakers. Where possible, observations made through visual inspection of vowel plots are supported through descriptive statistics (e.g., mean trajectories for a vowel class) and statistical tests (Student's t-test). Statistical tests were conducted when there were 3 or more tokens in each vowel class tested (full statistical results for BULL-BOWL analysis can be found in Appendix F).

6.3.3.2 Results

Table 6.6 shows the distribution of tokens in the /ol/ and /ɔl/ vowel classes for the speakers included in the analysis.

Table 6.6. Distribution of /ol/ and /ɔl/ tokens by speaker

Speaker	Group	Number of /ol/ tokens	Number of /ɔl/tokens
YT 7	African American	10	2
YT 8	African American	10	2
YT 10	African American	11	1
YT 11	African American	10	1
YT 12	African American	10	3
YT 13	African American	9	3
YT 15	African American	21	5
YT 17	European American	10	3
YT 18	European American	11	3

Two distinct patterns emerged in the YT dataset: /ɔl/ vowels with a lower F1 at nucleus than /ol/ vowels, and spectrally merged /ol/ and /ɔl/ classes.

Figure 6.15 shows the first pattern: BULL vowels appear to be higher (i.e., have a lower F1) than BOWL vowels. Although token counts are very low for some speakers, all 7 African American YT speakers appear to exhibit this pattern. For Speakers 7, 13, and 15, the height difference between the two vowel classes at vowel onset is significant ($p=1.83e-04$, $p=8.16e-04$, and $p=3.65e-04$, respectively); for Speakers 13 and 15, BULL has a significantly shorter trajectory than BOWL ($p=0.003$ and $p=7.06e-07$, respectively). No significant differences in F2 or duration between the two classes were found.

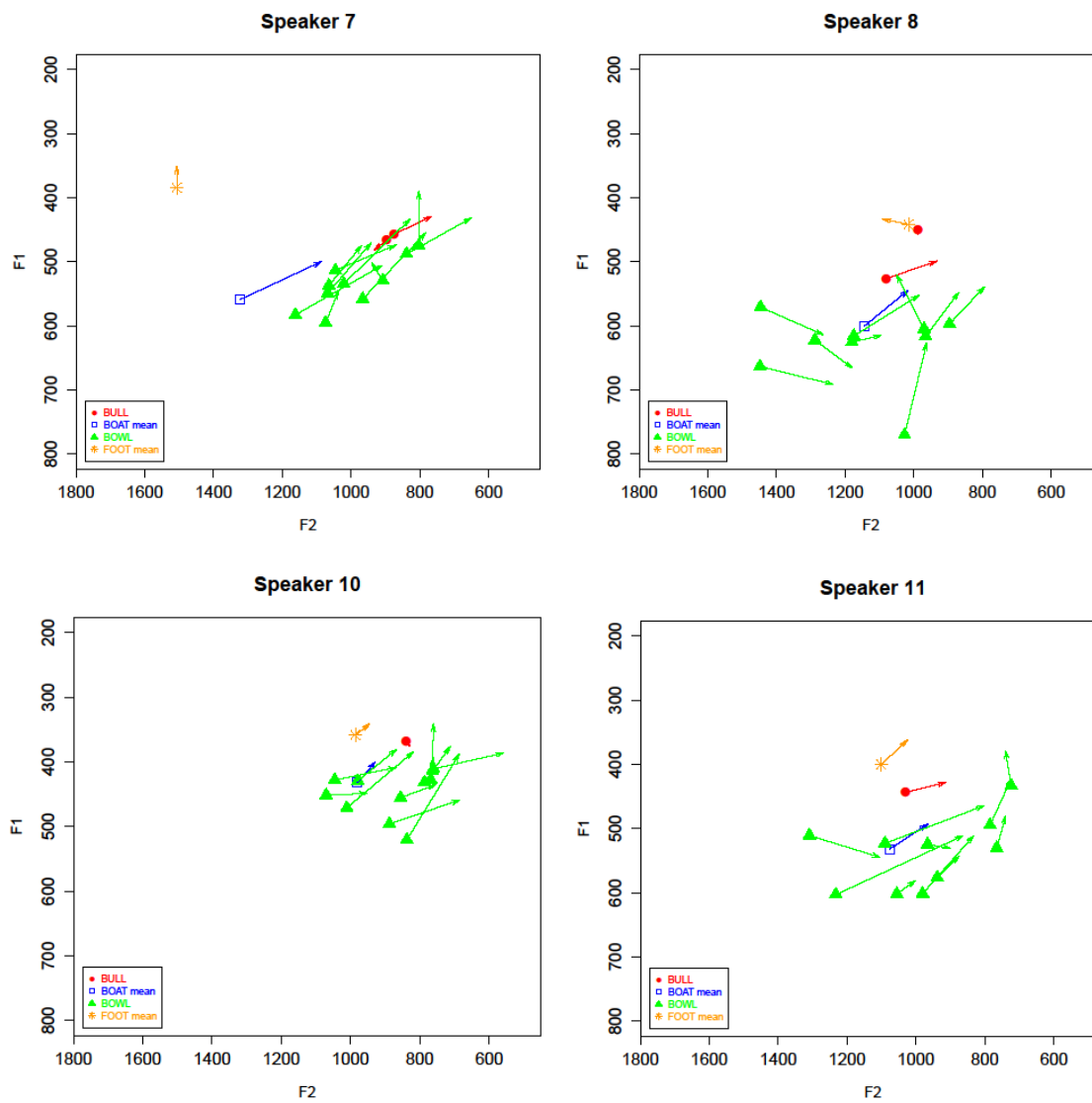


Figure 6.15. BOWL and BULL trajectories: BULL higher than BOWL

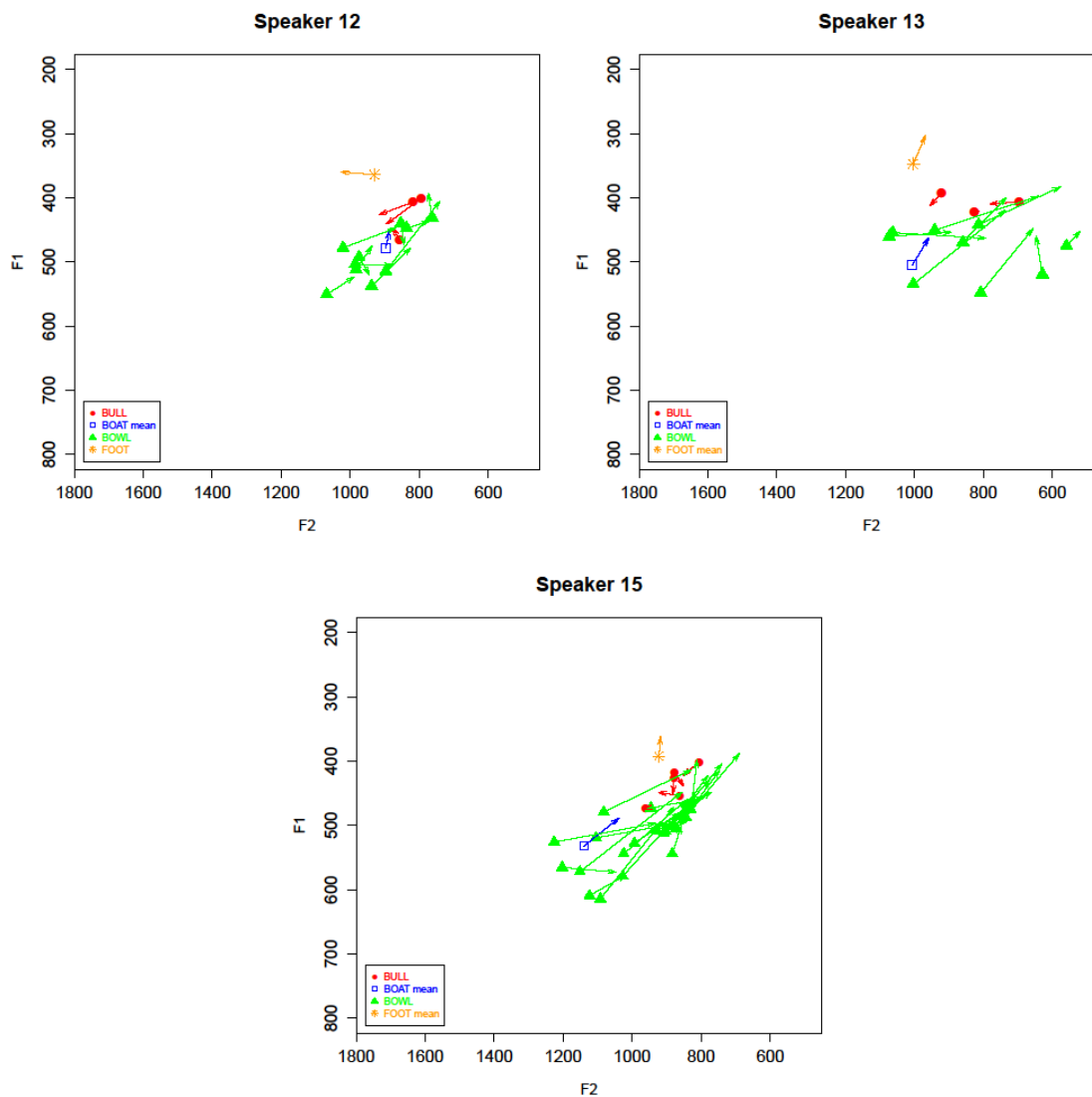


Figure 6.15 (cont). BOWL and BULL trajectories: BULL higher than BOWL

Figure 6.16 demonstrates the second pattern in the sample: BULL tokens fall within the spectral distribution of BOWL. The 2 European American speakers appear to display this pattern. For these speakers, no significant differences between the two vowel classes were found for F1, F2, duration, or trajectory.

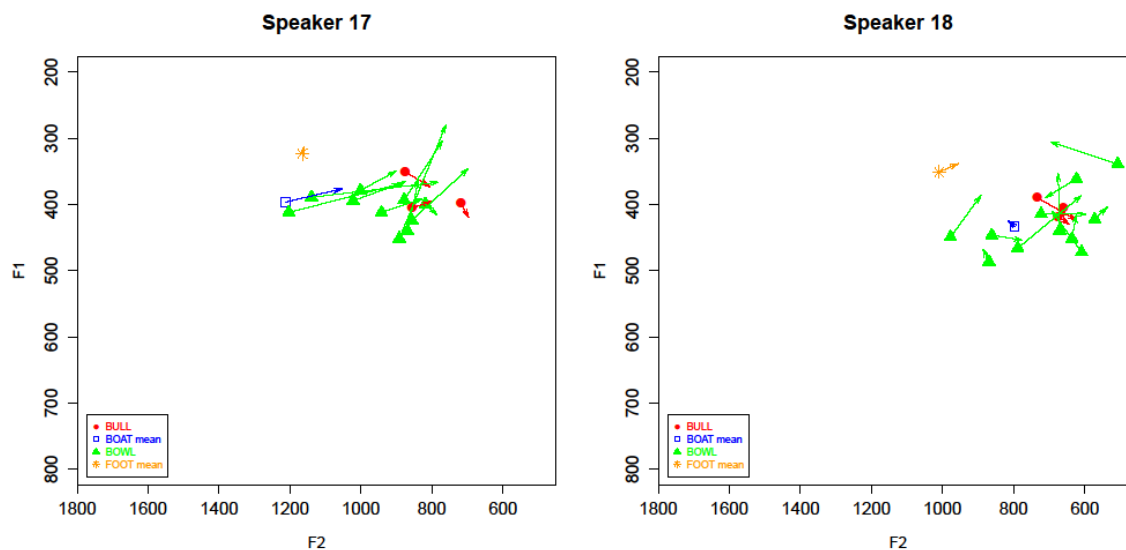


Figure 6.16. BOWL and BULL trajectories: BULL overlaps with BOWL

For the majority of speakers (6/9), both the BOWL and BULL classes appear to be more peripheral than the BOAT class. For 3 speakers, the BOWL and BULL classes appear to have similar F2 ranges as the BOAT class.

6.3.3.3 Summary

In summary, although this analysis was limited by small token counts, the available data suggests there may be an ethnicity-based difference in BULL-BOWL production, with African American speakers distinguishing the two vowel classes somewhat by vowel height, and European American speakers showing two spectrally merged vowel classes. For all speakers, BULL and BOWL F2 values appear to be similar, although the exact position of the two vowel classes relative to BOAT varies.

6.3.4 BAG/BEG

6.3.4.1 Methods

Speakers who had 2 or more tokens in each of the pre-voiced velar /æ/ and /ɛ/ classes (hereafter, /æɡ/ and /ɛɡ/) were considered for analysis. These included 5 African American speakers (Speakers 4, 5, 6, 7, and 15) and 2 European American speakers (Speakers 16 and 17). Where possible, the position and gliding of these vowel classes before voiceless velars was also examined.

While the number of /æɣ/ and /ɛɣ/ tokens is too small to conduct statistical analyses (e.g., t-tests, overlap statistics) for most speakers, vowel plots can be inspected individually for testing of the following broad hypotheses:

- Pre-velar /æɣ/ and /ɛɣ/ may pattern differently than non-prevelar /æ/ and /ɛ/ (Wassink et al. 2009, Wassink 2015, Wassink 2017).
- Pre-nasal /æN/ and pre-voiceless velar /æk/ may pattern differently than /æ/ (Wassink et al. 2009).

Additionally, hypotheses about the distribution of /æ/ and /ɛ/ classes before voiceless velars were posited, based on initial auditory impressions:

- For YT speakers, [æk] and [ɛk] tokens have a different distribution than [æɣ] and [ɛɣ], respectively.
- For YT speakers, [æŋ] and [ɛŋ] have comparable distributions to [æɣ] and [ɛɣ], respectively (i.e., these vowels are raised; after auditory impressions of YT dataset).

Six groups of F2-by-F1 vowel plots were graphed and analyzed:

- 1) By-speaker plots comparing the location and trajectories of [æm], [æŋ], and [æŋ] tokens;
- 2) By-speaker plots comparing the location and trajectories of [æŋ] and [æɣ] tokens;
- 3) By-speaker plots showing the location and trajectories of tokens of the /æɣ/ and /ɛɣ/ classes, with mean /æ/, /ɛ/, /e/, and /i/ trajectories as reference points;
- 4) By-speaker plots showing the location and trajectories of tokens of the /æɣ/ and /æk/ classes, with mean /æ/ trajectories as reference points;
- 5) By-speaker plots showing the location and trajectories of tokens of the /ɛɣ/ and /ɛk/ classes, with mean /ɛ/ trajectories as reference points; and
- 6) By-speaker plots showing the location and trajectories of tokens of the /æN/ class, with mean /æ/, /ɛ/, /e/, and /i/ trajectories as reference points.

Plots were not normalized, as within-speaker trajectory patterns were observed, and vowels were not compared across speakers. Where possible, observations made through visual inspection of

⁸ Where possible, mean trajectories of pre-velar /ɛɣ/ or /ɛk/ were used as a comparator; when these tokens were not present in the subject's dataset, non-pre-velar /e/ was used.

vowel plots are supported through descriptive statistics (e.g., mean trajectories for a vowel class) and statistical tests (Student's t-test).

6.3.4.2 Results

Table 6.7 shows the distribution of subjects included in the front vowel analysis, by gender and ethnicity.

Table 6.7. Distribution of subjects for front vowel analysis

	Gender	
	Men	Women
<i>European Americans</i>	2	0
<i>African Americans</i>	1	4

Figure 6.17 shows boxplots of trajectory length for the COT, BAIT, and TOOT vowels by speaker. For all speakers, the COT vowel is considered a relatively monophthongal vowel (with mean trajectories ranging from 87 to 251 Hz; mean for the whole sample is 156 Hz) and TOOT is a vowel with a moderate glide (with mean trajectories ranging from 181 to 525 Hz; mean for the whole sample is 341 Hz). BAIT mean trajectories appear to fall between COT and TOOT for most of the sample, and ranged from 123 to 342 Hz, with a sample mean of 221 Hz. Notable exceptions are Speakers 7 and 19, for whom the BAIT vowel appears to have a mean trajectory smaller than that of COT. By-speaker t-test comparisons of COT and BAIT trajectories yield significant differences between the two classes in only 2 cases, for African American female speakers 5 ($p=6.24e-4$) and 11 ($p=5.50e-4$; full BAG-BEG-BAKE statistical results can be found in Appendix G).

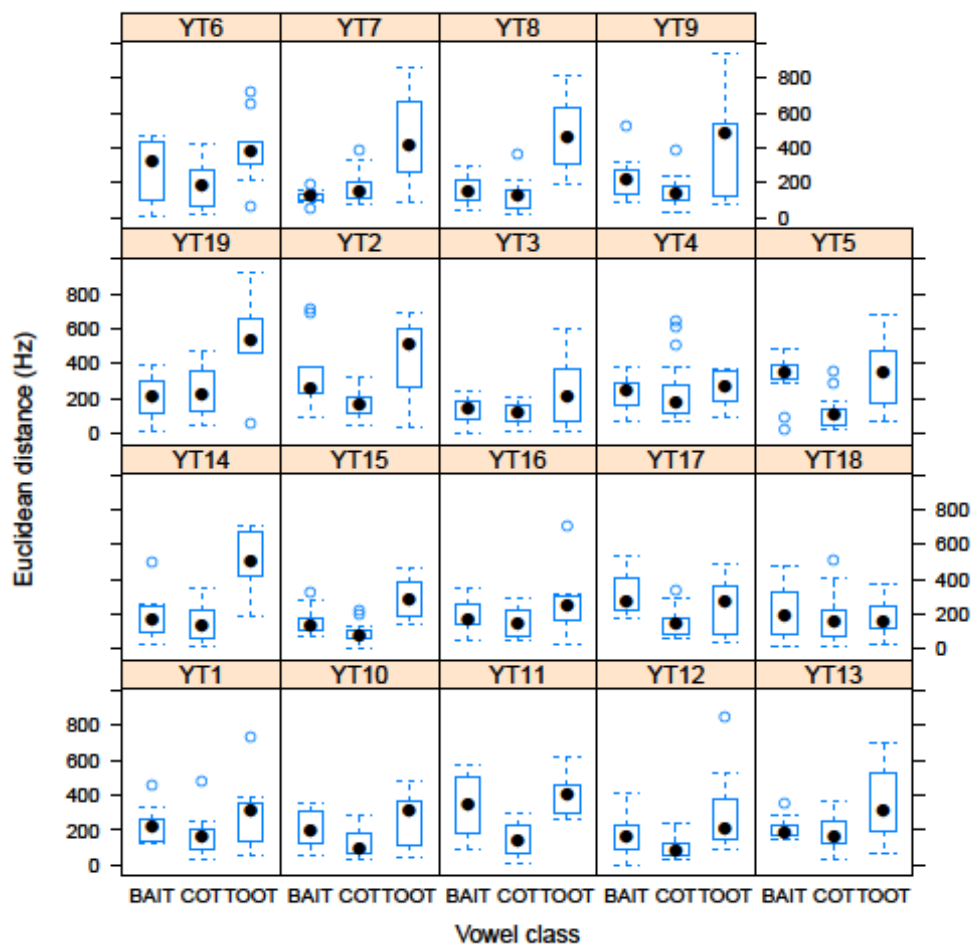


Figure 6.17. Mean trajectory for COT, BAIT, and TOOT, by YT speaker

Vowel trajectories were plotted and compared for the purpose of deciding whether to categorize /æŋ/ tokens with the pre-nasal class or with the pre-velar class. Figure 6.18 shows all pre-nasal tokens by speaker. /æŋ/ tokens are shown in blue, /æ/ before other nasals is shown in green, and mean trajectory values for /æ/ before nonvelar obstruents is shown in red. For all speakers, the prevelar nasal appears to be upgliding, while other prenasal /æ/ tokens tend to be downgliding.

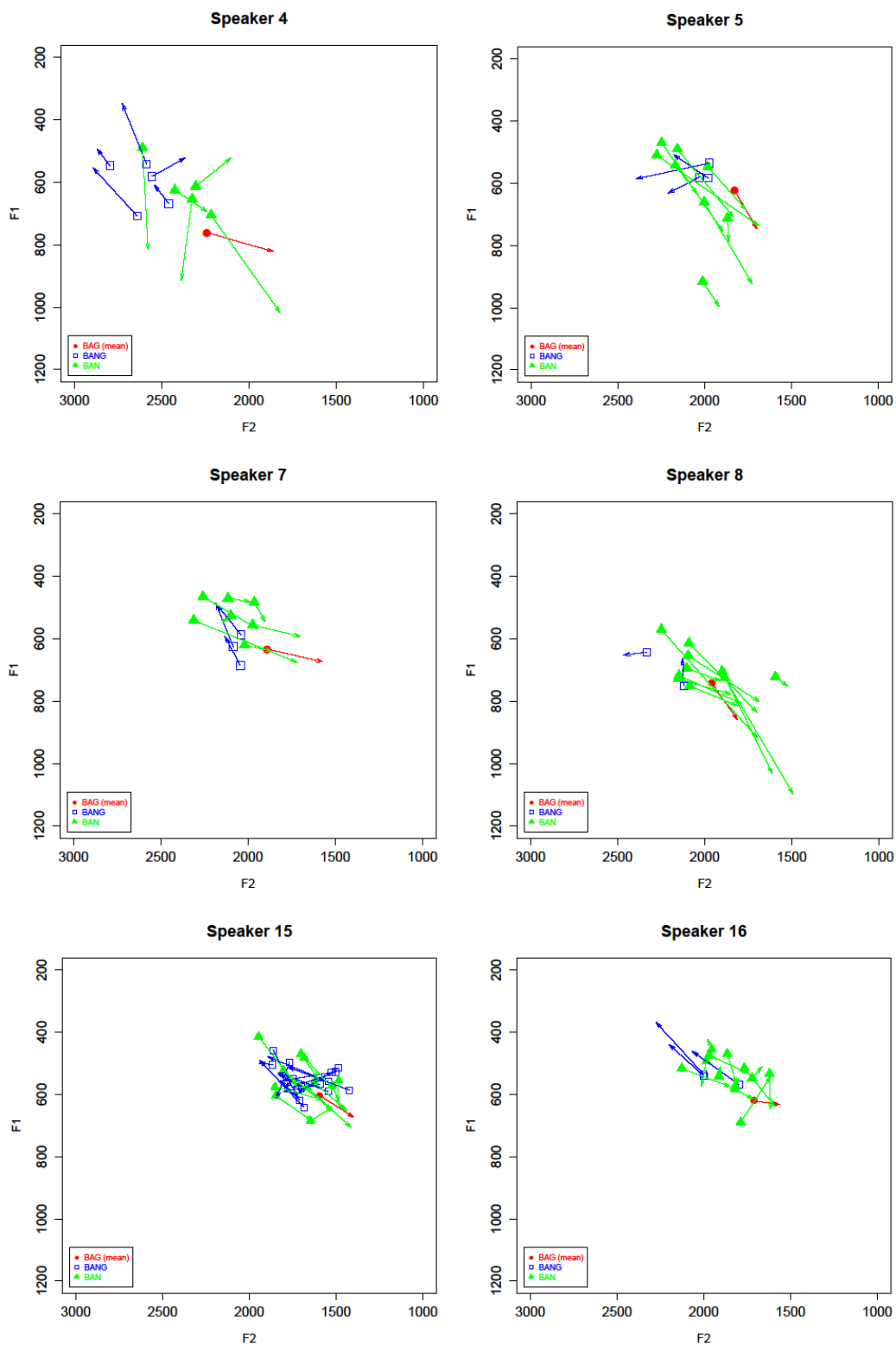


Figure 6.18. /æn/æm/ vs. /æŋ/ tokens, by YT speaker

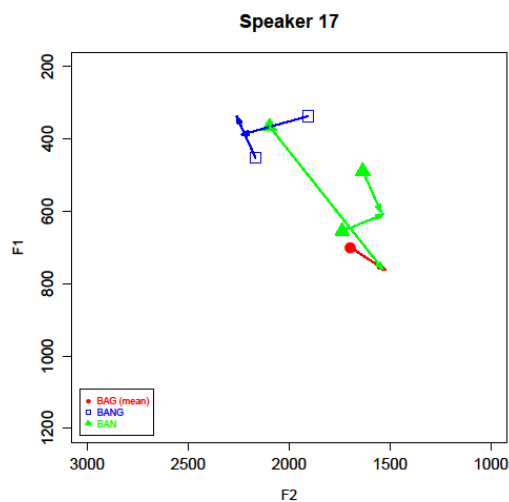


Figure 6.18 (cont). /æŋ/æm/ vs. /æŋ/ tokens, by YT speaker

For 4 out of 7 YT speakers, the /æŋ/ class consists of only [æŋ] tokens. For 3 remaining 3 YT speakers, Figure 6.19 shows the trajectories of each [æŋ] and [æŋ] token. [æŋ] tokens are shown in blue, [æŋ] tokens are shown in green, and mean trajectory values for /æ/ before other obstruents is shown in red. The direction of the [æŋ] and [æŋ] trajectories are similar, and the two groups tend to overlap spectrally as well. For the purposes of the following analysis, [æŋ] and [æŋ] will both be included in the /æŋ/ class.

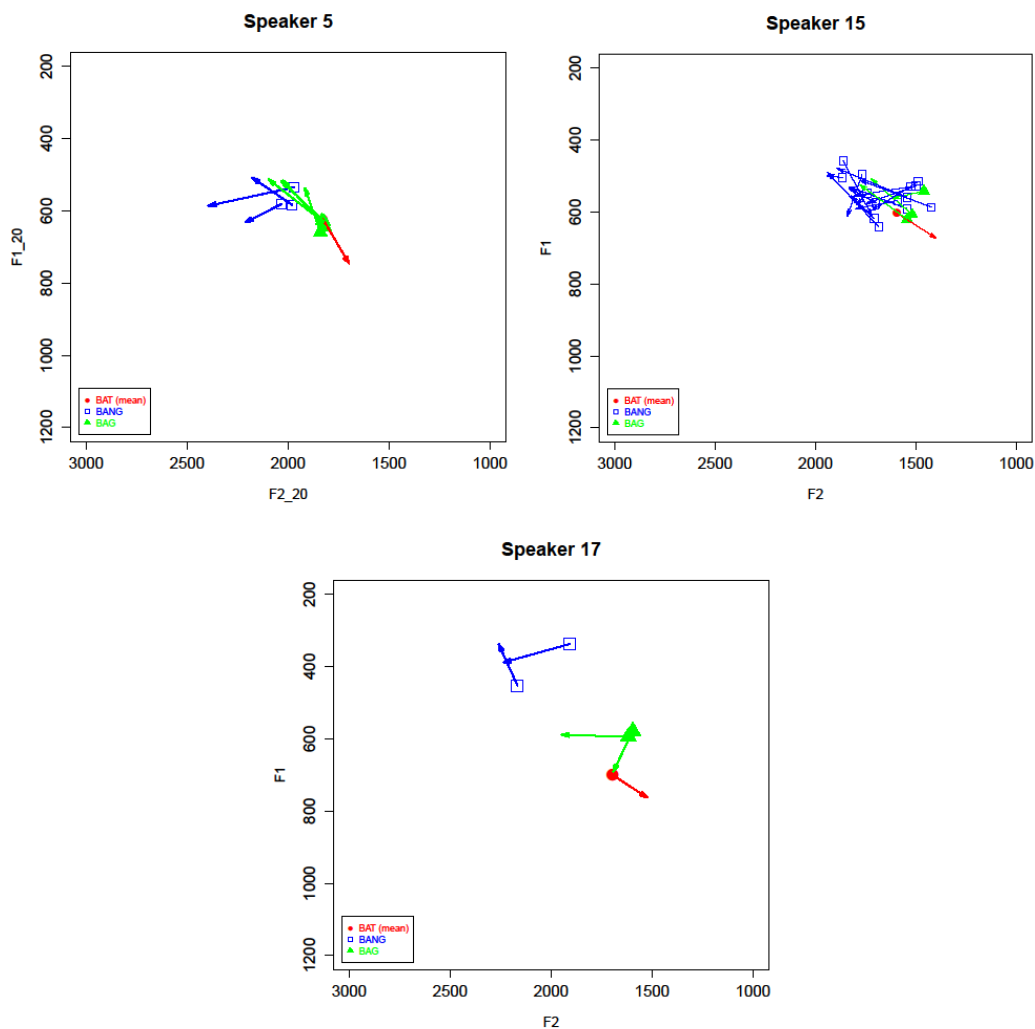


Figure 6.19. /æɹ/ vs. /æŋ/ tokens, by YT speaker

Figure 6.20 shows vowel plots of the African American speakers, and Figure 6.21 shows the vowel plots of the European American speakers. /æɹ/ and /ɛɹ/ tokens are plotted in blue and yellow, respectively, alongside mean values for /æ/, /ɛ/, and /e/ in non-pre-velar environments (red, green, and magenta, respectively). Each speaker's mean /i/ values are plotted (light blue) for reference.

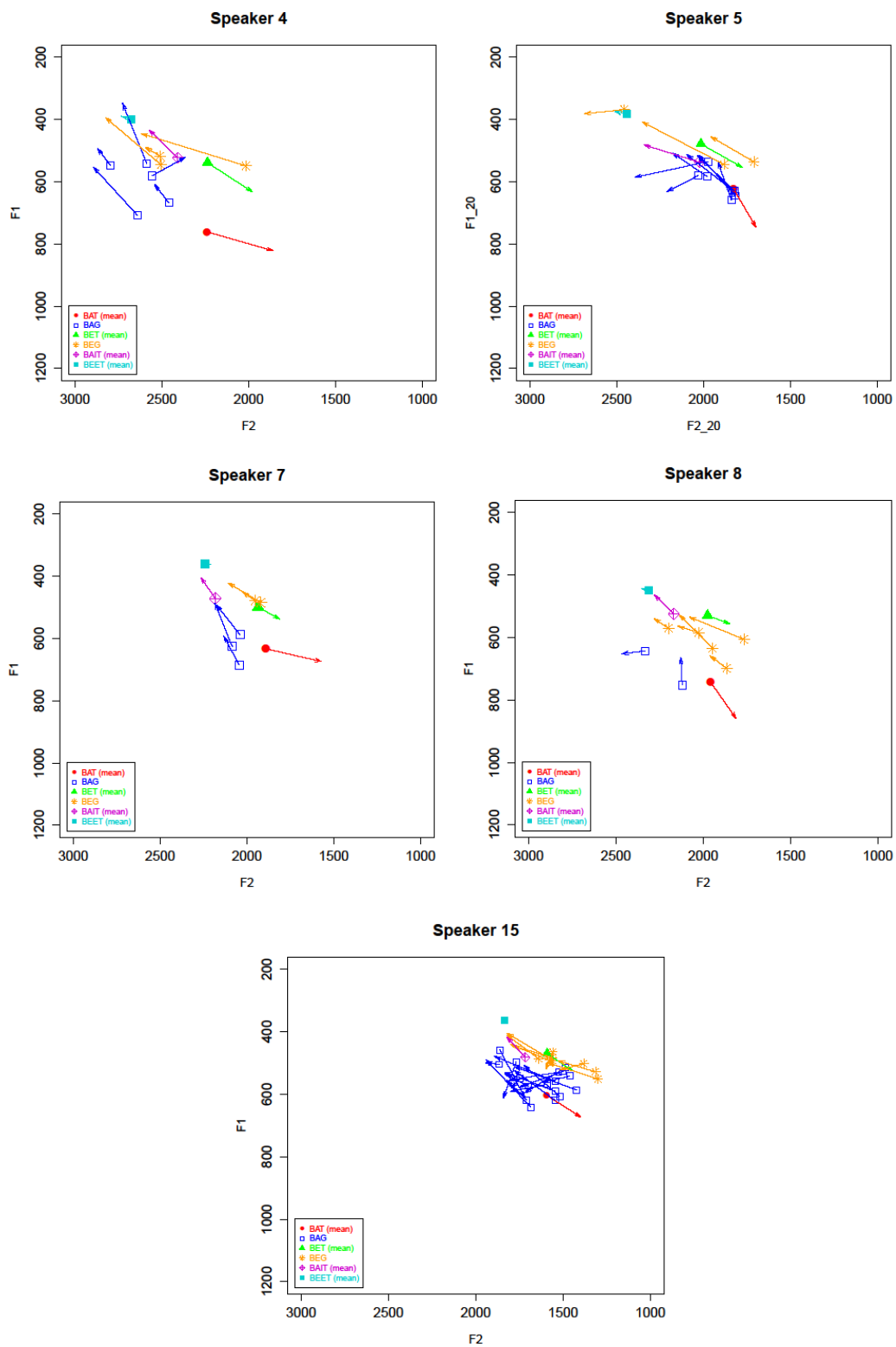


Figure 6.20. /æ/ and /ɛ/ for YT African American speakers

Most notably, the direction of the glide in the pre-velar /æ/ and /ɛ/ vowels is different from the direction of the glide in non-pre-velar position. For all 5 African American speakers, /æɪg/ and /ɛɪg/ tend to be upgliding vowels, while their non-pre-velar counterparts are ingliding. For 3 of 5 speakers, the /ɛg/ glides appear to overlap strongly with the /e/ class. /æɪg/ appears to be raised relative to non-pre-velar /æ/, and /æɪg/ glides appear to be lower and more peripheral than /ɛg/ glides. These patterns are consistently found in the European American speakers as well, as found in Figure 6.21.

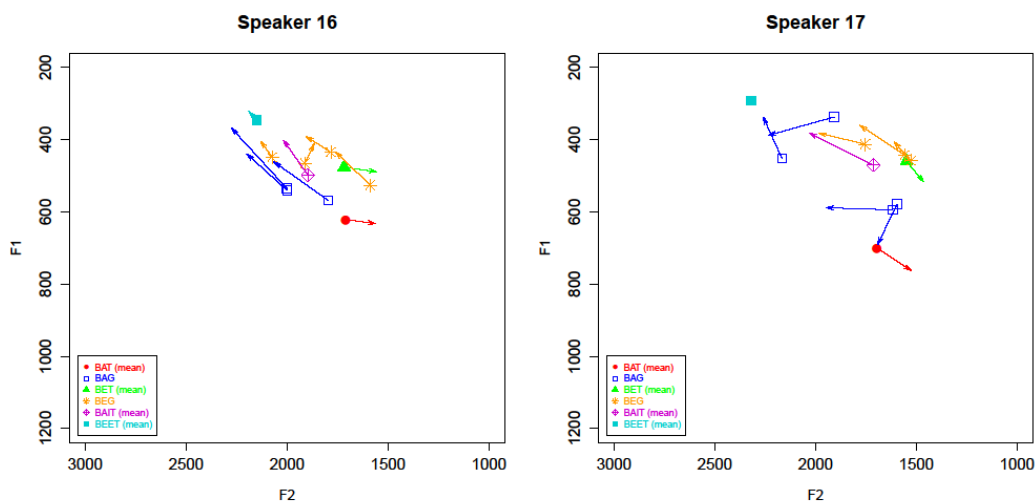


Figure 6.21. /æɪg/ and /ɛɪg/ for European American speakers

The pattern of upgliding /æ/ and /ɛ/ vowels seems to be only applicable before voiced velars; these vowels before voiceless velars tend to have a downglide rather than an upglide. Figures 6.22 and 6.23 demonstrate the difference between pre-voiced and pre-voiceless /æ/ and /ɛ/ for Speakers 4 (an African American woman) and 16 (a European American man). Both speakers show /æk/ and /ɛk/ vowel tokens clearly in the range of non-pre-velar /æ/ and /ɛ/, respectively.

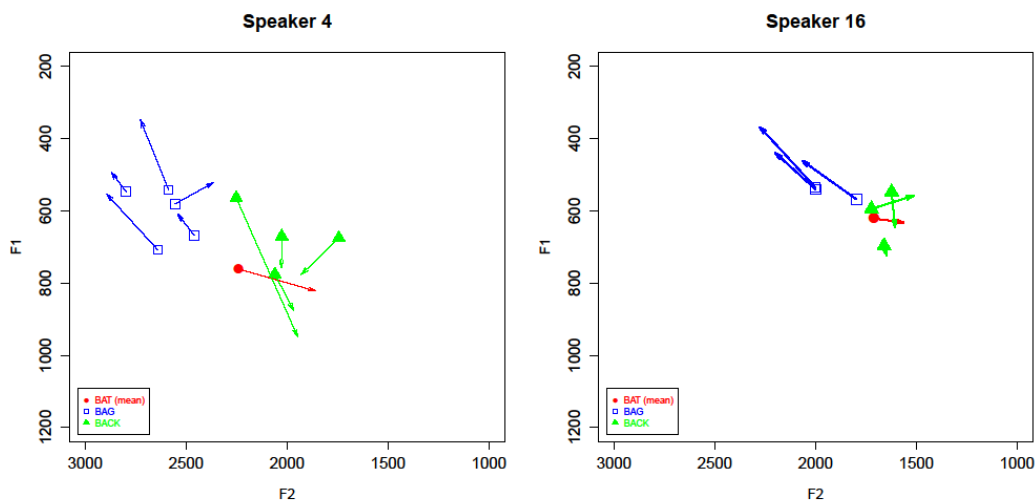


Figure 6.22. Pre-voiced vs. pre-voiceless /æ/ for Speakers 4 and 16

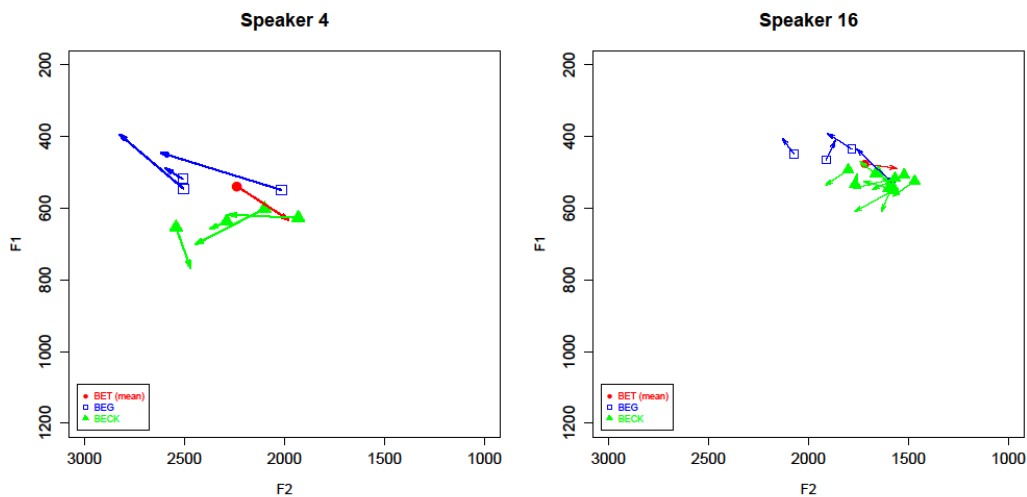


Figure 6.23. Pre-voiced vs. pre-voiceless /ɛ/ for Speakers 4 and 16

Figure 6.24 shows the non-prevelar pre-nasal /æN/ vs. non-prevelar non-prenasal /æ/ for the full sample of speakers. Although in many cases the token counts are too low for meaningful t-tests to be conducted, it appears that the onset of /æN/ tends to be fronted and raised relative to its non-prenasal counterpart. For Speaker 5, the fronting of /æN/ is significant ($p=9.51e-4$), for Speaker 16 /æN/ is significantly raised relative to /æ/ ($p=0.003$), and for Speaker 7 /æN/ is fronted and raised relative to /æ/ ($p=0.002$ and $p=0.004$). No significant differences were found between the length of trajectories of /æN/ and /æ/.

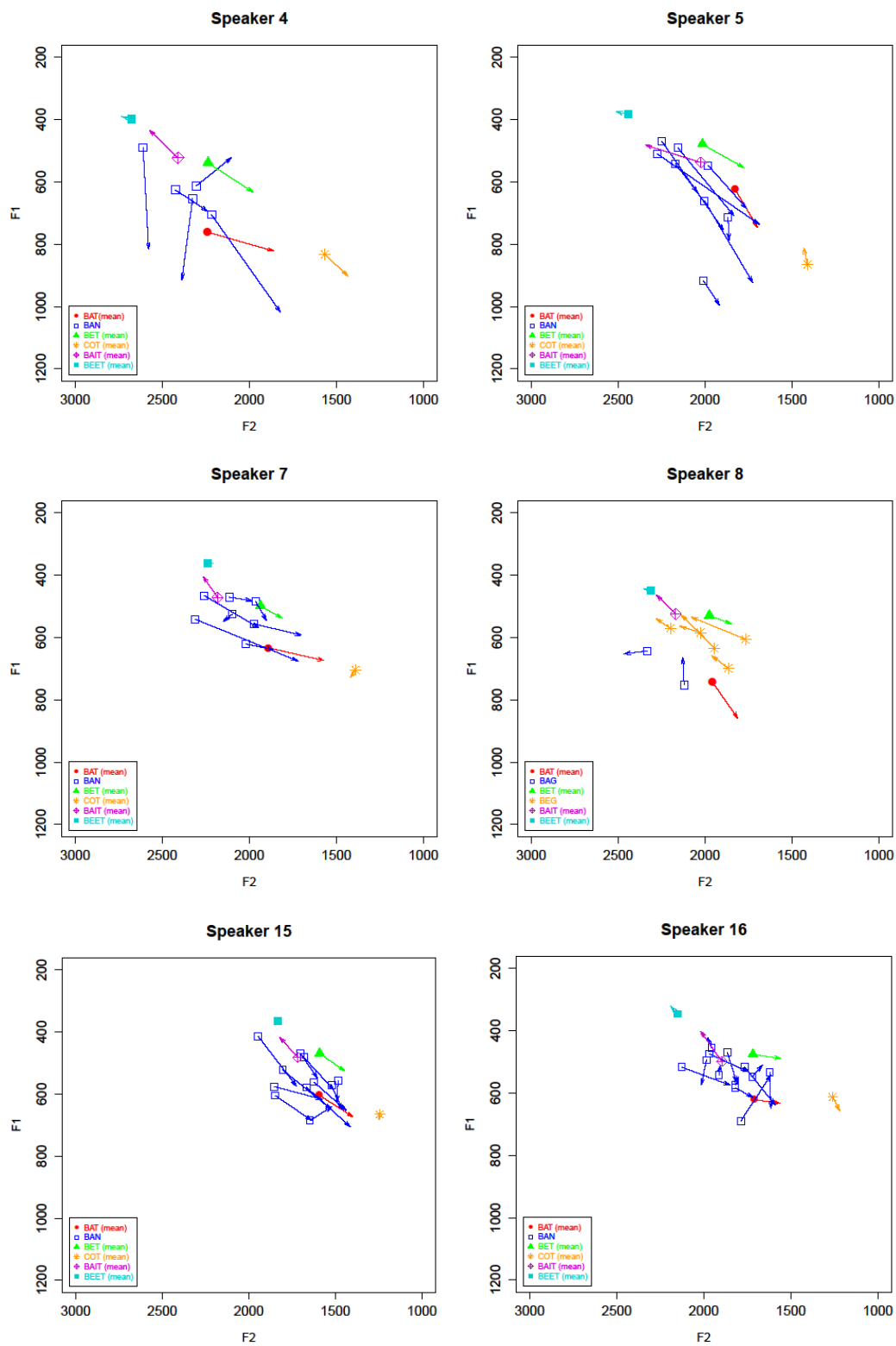


Figure 6.24. /æN/ and /æ/ trajectories

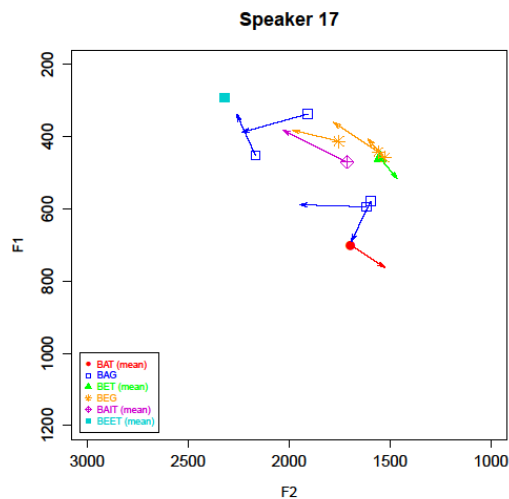


Figure 6.24 (cont). /æN/ and /æ/ trajectories

6.3.4.3 Summary

Most features of the /æ/, /e/ and /ɛ/ classes are consistent within the sample. [æŋ] vowels were found to consistently pattern with other pre-velar [æ] tokens for the sample. The sample for the current study diverged from the sample described in Wassink et al. (2009), in that no gender differences in the merging of /æŋ/, /eg/ and /ɛg/ were observed. For all YT speakers, /æŋ/ appeared to be raised and fronted, yet lower and more peripheral than the /eg/ and /ɛg/ classes, which showed strong spectral overlap. The sample from Wassink et al. (2009) showed a more diverse distribution of the three classes; /eg/ and /ɛg/ showed strong spectral overlap, and for some speakers /æŋ/ patterned with the other two pre-velar classes. The findings align more closely with the results of Riebold (2014), which shows consistently strong overlap between /eg/ and /ɛg/, and raised/fronted but distinct /æŋ/.

No patterns indicating ethnicity differences in the production of the /æ/, /e/, and /ɛ/ classes were observed. /æN/ appears to be raised and fronted, relative to /æ/. Comparing the YT sample to that of Riebold (2014), the gliding pattern of pre-velar vowels is similar across studies. Pre-velar vowels appear to show more of an upgliding pattern for the YT speakers (African American and European American). In Riebold's SS-ANOVA data, /æŋ/ is clearly upgliding, /ɛg/ shows a relatively steady trajectory, and pre-velar /e/ is ingliding, though to a lesser extent than non-pre-velar /e/. Riebold (2012) asserts that for some PNWE speakers, non-pre-velar /æ, e, ɛ/ are

becoming merged, but for YT speakers (European American and African American), the non-pre-velar vowels remain distinct. This study found some variation within YT in the trajectory length of /e/; most YT speakers tend to monophthongize /e/, but others have a diphthongal vowel for this class.

6.3.5 *Back vowels*

6.3.5.1 *Methods*

Fronting of the BOOT, TOOT, BOAT, and BOOK classes were examined for 19 subjects. The following broad hypotheses were tested:

- /u/ after coronal consonants (TOOT) is fronted relative to non-postcoronal /u/ (BOOT; Labov et al. 2006);
- BOOK is fronted but BOAT is not fronted (Wassink 2017).

Table 6.8 gives a summary of the demographic makeup of the sample.

Table 6.8. Distribution of speakers for back vowel analysis

	Gender	
	Men	Women
<i>YT European Americans</i>	3	1
<i>YT African Americans</i>	4	11

F1-by-F2 plots of each speaker were visually examined for fronting of each vowel class. Plots were not normalized, as only within-speaker patterns were observed, and vowels were not compared across speakers. T-tests comparing F2 at midpoint were conducted comparing the BOAT and BOOT class (testing fronting of BOOT), the BOOT and TOOT class (testing fronting of TOOT), and the BOAT and BOOK class (testing fronting of BOOK) for each speaker.

6.3.5.2 *Results*

For all 19 speakers, the TOOT and BOOK classes were fronted relative to the BOOT and BOAT classes, which were among the most backed vowels for most speakers. Twelve of 19 speakers had significantly different mean F2 values for TOOT and BOOT at vowel midpoint, suggesting fronting of TOOT relative to BOOT. Seventeen of 19 speakers showed significant differences

between BOOK and BOAT, implying strong fronting of BOOK relative to BOAT. All speakers showed a strongly backgliding TOOT class. Figure 6.25 shows a vowel plot of a single speaker exemplifying the position of these vowel classes. Vowel plots and t-test results for all speakers can be found in Appendix H.

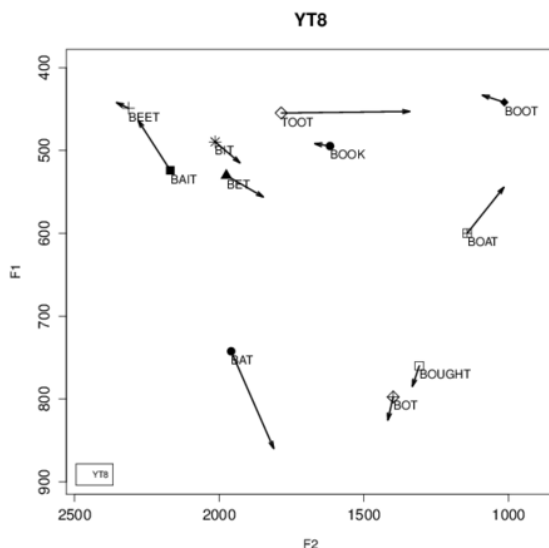


Figure 6.25. F1-by-F2 plot of major vowel classes for speaker YT8

Speakers YT5, YT7, and YT18 also showed some fronting of the BOOT class, so that BOOT was somewhat fronted relative to the BOAT class, which was the most backed vowel class. However, all t-tests comparing the BOOT and BOAT classes at midpoint by speaker were not found to be significant at the Bonferroni-corrected threshold of $p < 0.0025$. Fronting of the BOOT class did not show any robust pattern by ethnicity or gender, as this pattern was found in 2 African American female speakers and 1 European American male speaker. Figure 6.26 shows vowel plots for these 3 speakers.

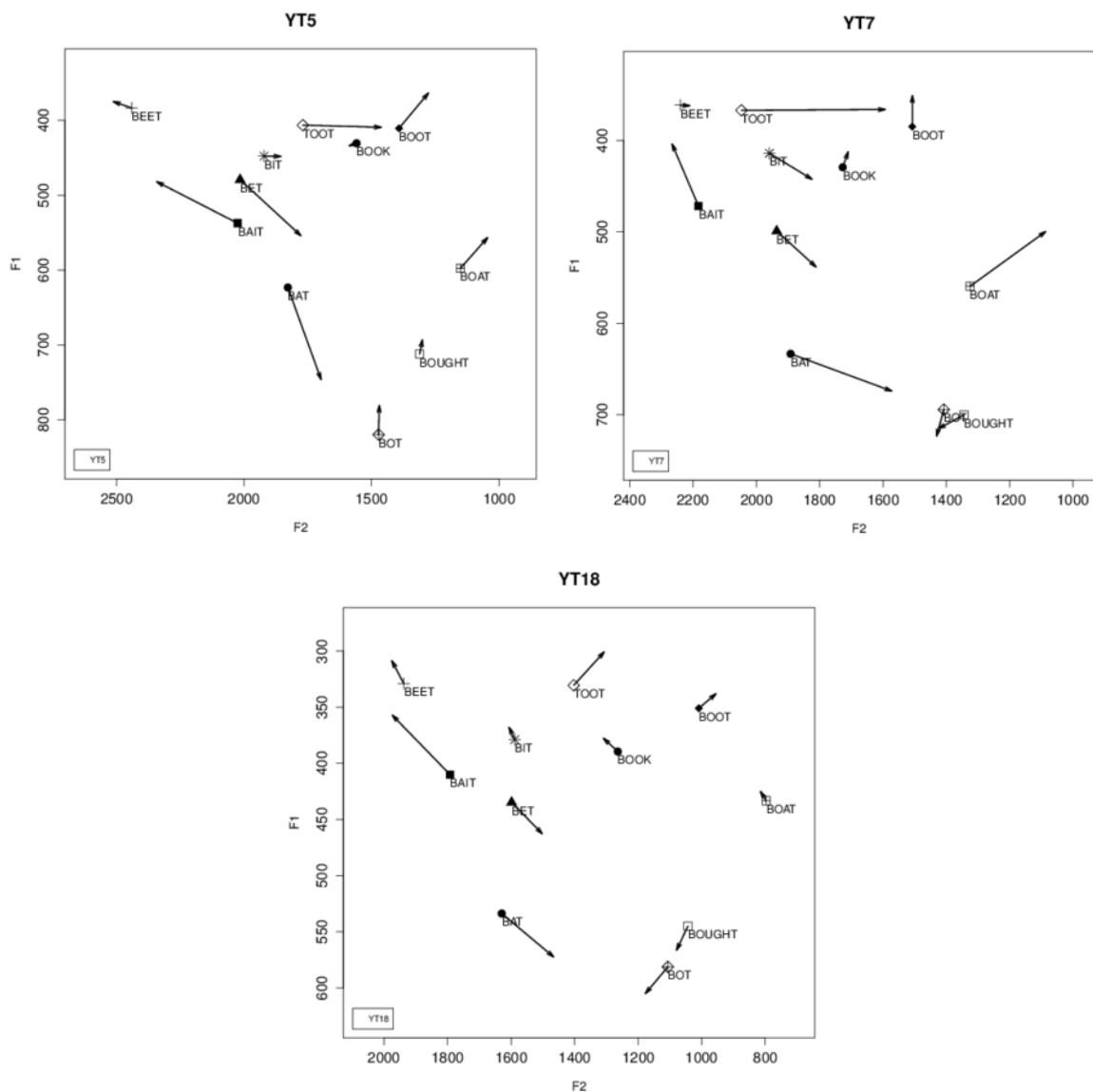


Figure 6.26. F1-by-F2 plot of major vowel classes for speakers YT5, YT7, and YT18

6.3.5.3 Summary

All 19 speakers displayed fronted TOOT and BOOK classes, relative to BOOT and BOAT. All speakers showed a strongly backgliding TOOT class. Additionally, some speakers showed fronting of the BOOT class. No consistent patterns by ethnicity or gender were identified.

6.3.6 /aɪ/ reduction

6.3.6.1 Methods

Analysis of /aɪ/ production was conducted for 22 subjects. The /aɪ/ analysis was centered on the following broad hypotheses:

- YT speakers vary in the percentage of reduced /aɪ/ glide (Scanlon & Wassink, 2010a).
- Overall, African American YT speakers show a higher proportion of glide reduction than European American YT speakers (Scanlon & Wassink, 2010a).
- Of African American YT speakers who show some /aɪ/ glide reduction, speakers reduce the glide in /aɪ/ most often before liquids; at intermediate levels before voiced obstruents, nasals, and in open syllables; and least often before voiceless obstruents (Scanlon & Wassink, 2010a).
- YT African American subjects have longer non-reduced /aɪ/ glides than YT European Americans in the pre-voiceless environment (Thomas, 2001).

Both auditory and acoustic analyses are required to test these hypotheses. Erker (2012) notes that a unified binary (discrete) and continuous approach to variation does more than simply increase the breadth of an analysis, because certain patterns of variation “are opaque at exclusively categorical or gradient levels” (11). An auditory analysis was carried out because there is no established best practice for an acoustic cutpoint for describing an individual vowel token as fully diphthongal or reduced; use of such a cutpoint would be made more complicated by the observation that speakers from different groups may utilize different strategies for reducing /aɪ/ (Oxley, 2009; Swan, 2015). In contrast, the total percentage of auditorily reduced tokens for an individual speaker is a useful and easy-to-interpret statistical point. An auditory analysis, however, cannot cleanly capture differences in production between, say, prevoiceless and pre-voiced /aɪ/, or describe how demographic features such as ethnicity might influence vowel height or fronting. For example, given regional differences in vowel production in the United States, the interpretability of calling a particular vowel auditorily, e.g., ‘raised’ is dependent on the distribution of a reader’s own phonetic system (Milroy & Gordon, 2003). Correspondingly, auditory analysis yields an understanding of patterns of by-speaker (i.e., idiosyncratic) /aɪ/

reduction, while acoustic analysis of normalized data allows for the comparison of /aɪ/ vowels across speakers and across phonetic contexts.

All YT speakers in the sample were considered for auditory analysis of /aɪ/. Table 6.9 shows the distribution of the sample by dataset, ethnicity, regionality, and gender.

Table 6.9. Distribution of speakers for /aɪ/ auditory analysis

	Gender	
	Men	Women
<i>YT European Americans</i>	4	1
<i>YT African Americans</i>	4	13

For the auditory analysis, individual tokens were coded as diphthongal or reduced. A token was counted as diphthongal if the vowel offglide was heard as reaching [ɪ] or [e]. A token was counted as reduced if it fell short of this target. Auditory results (as proportion of tokens heard as monophthongal) were summarized by speaker, and by following environment (liquid [l], nasal [N], voiced obstruent [V], voiceless obstruent [0], and in open syllables [#]).

For a subset of the speakers used in the auditory analysis, acoustic analysis of /aɪ/ was conducted (n=24). Table 6.10 shows the distribution of the sample used for acoustic analysis by dataset, ethnicity, regionality, and gender.

Table 6.10. Distribution of speakers for /aɪ/ acoustic analysis

	<i>Gender</i>	
	<i>Men</i>	<i>Women</i>
<i>European Americans</i>	3	1
<i>African Americans</i>	3	12

Exploratory plots were examined. /aɪ/ in pre-voiced and pre-voiceless environments were plotted, and boxplots are presented for easy comparison of trajectory between the phonological environments.

A subset of the sample (n=12, 114 tokens), using YT African Americans and YT European Americans, was used for a between-speaker analysis. First, only /aɪ/ tokens in the pre-voiceless environment were considered, in order to control for the effect of phonological environment. The pre-voiceless context in particular was used because Thomas (2001) found consistently longer glides in the pre-voiceless context, compared to pre-voiced /aɪ/, for African Americans. Second, only speakers who did not have any tokens of pre-voiceless /aɪ/ reduced (as determined in the auditory analysis) were considered, in order to control for the effect of variable glide reduction. Table 6.11 shows the number of speakers used in the analysis, by speaker ethnicity and familiarity with the interviewer (as discussed in §6.2.5). Table 6.12 shows the number of tokens in each of these groups.

Table 6.11. Distribution of speakers for /aɪ/ degree of gliding analysis

	Familiar	Non-familiar
<i>European Americans</i>	1	2
<i>African Americans</i>	6	3

Table 6.12. Distribution of tokens for /aɪ/ degree of gliding analysis

	Familiar	Non-familiar
<i>European Americans</i>	5	20
<i>African Americans</i>	66	23

A regression of trajectory length on a group of social and environmental factors, and their interactions, was performed:

- /aɪ/ trajectory $\sim \alpha + \beta_1$ subject ethnicity* β_2 vowel duration* β_3 reduction level* β_4 familiarity* β_5 subject gender + ϵ

Reduction level was coded as the overall percent of /aɪ/ tokens that were coded as auditorily reduced. Similarly, regressions of $\Delta F1$ and $\Delta F2$ were performed:

- $\Delta F1 \sim \alpha + \beta_1$ subject ethnicity* β_2 vowel duration* β_3 reduction level* β_4 familiarity* β_5 subject gender + ϵ
- $\Delta F2 \sim \alpha + \beta_1$ subject ethnicity* β_2 vowel duration* β_3 reduction level* β_4 familiarity* β_5 subject gender + ϵ

Regressions of vowel position (F1 and F2 at 20% and 80%) were modeled:

- $F1_{20} \sim \alpha + \beta_1 \text{subject ethnicity} * \beta_2 \text{vowel duration} * \beta_3 \text{reduction level} * \beta_4 \text{familiarity} * \beta_5 \text{subject gender} + \varepsilon$
- $F1_{80} \sim \alpha + \beta_1 \text{subject ethnicity} * \beta_2 \text{vowel duration} * \beta_3 \text{reduction level} * \beta_4 \text{familiarity} * \beta_5 \text{subject gender} + \varepsilon$
- $F2_{20} \sim \alpha + \beta_1 \text{subject ethnicity} * \beta_2 \text{vowel duration} * \beta_3 \text{reduction level} * \beta_4 \text{familiarity} * \beta_5 \text{subject gender} + \varepsilon$
- $F2_{80} \sim \alpha + \beta_1 \text{subject ethnicity} * \beta_2 \text{vowel duration} * \beta_3 \text{reduction level} * \beta_4 \text{familiarity} * \beta_5 \text{subject gender} + \varepsilon$

6.3.6.2 Results

First, the degree of gliding in different phonological environments was examined. Auditory results (as proportion of tokens heard as monophthongal) are presented by speaker in Table 6.13.

Table 6.13. /aɪ/ glide reduction, by speaker

	Environment					
Speaker	Open	_Nasal	_ [liquid]	_Vcd	_Vcls	Total % reduced
<i>European Americans</i>						
YT19	0/5	0/6	0/2	0/4	0/6	0/23 0%
YT17	0/5	0/14	0/5	2/13	0/14	2/51 4%
YT23	1/8	0/11	2/4	0/5	1/9	4/37 11%
YT18	2/13	0/12	3/6	1/12	2/13	8/56 14%
YT16	1/5	4/12	2/2	2/11	0/5	9/35 26%
<i>African Americans</i>						
YT13	0/6	0/5	0/2	0/6	0/15	0/34 0%
YT9	0/9	2/12	1/4	0/7	0/5	3/37 8%

Table 6.13 (cont). /aɪ/ glide reduction, by speaker

Speaker	Environment					Total % reduced
	Open	_Nasal	_[liquid]	_Vcd	_Vcls	
YT12	4/14	0/30	3/8	1/16	0/11	8/79 10%
YT20	1/10	2/9	2/7	1/12	0/8	6/46 13%
YT7	0/4	3/8	0/1	0/4	0/4	3/21 14%
YT11	3/8	0/12	2/3	1/12	1/15	7/50 14%
YT14	4/12	4/20	2/7	0/18	0/14	10/71 14%
YT8	0/5	0/17	7/7	1/17	0/4	8/50 16%
YT5	0/2	4/18	2/3	1/6	1/5	8/34 24%
YT22	7/13	2/11	2/4	1/14	0/	12/48 25%
YT4	4/7	0/5	2/3	1/4	0/5	7/24 29%
YT15	11/16	8/2	9/16	11/22	0/26	39/105 37%
YT2	4/10	4/10	1/1	4/9	0/3	13/33 39%
YT10	4/13	7/17	6/6	4/11	2/1	23/59 39%
YT3	2/7	8/15	4/5	5/10	1/9	20/46 43%
YT6	7/12	4/10	3/5	8/12	0/5	22/44 50%
YT1	5/9	2/8	2/2	5/5	0/4	14/28 50%

For each speaker, the observed number of reduced tokens is shown, as a ratio of total tokens for each phonological environment. Percentages located below ratios indicate the proportion a particular environment represents out of all environments observed for that speaker. Finally, the rightmost column indicates, for each speaker, the proportion of reduced (ay) tokens overall.

Focusing on the European American YT speakers, we see that speakers ranged from 0% to 26%

reduced /aɪ/, and four out of 5 speakers showed non-categorical reduction of /aɪ/, in contrast with literature broadly describing /aɪ/ production as categorically diphthongal among non-southern European Americans (e.g., Labov et al., 2006). Speakers showed similarity in treatment of most environments, with the exception of Speaker 16, who reduced the glide in prenasal environments. Turning to the African-American speakers, we see a wide range in reduced tokens, from 0-50%. Care should be taken in comparing the two samples because they differ in number of speakers. Results strongly suggest, however, that the typical African-American speaker in this sample reduces (ay) with greater frequency (22%) than the typical European American speaker in this sample (11%). Pre-voiced and open syllables show the highest levels of reduction, as we might expect.

Figure 6.27 shows the distribution of trajectories for the /aɪ/ classes by speaker. The boxplots show the trajectory length for pre-voiceless (0) and pre-voiced (V) /aɪ/ tokens. For comparison, the trajectory of the /a/ class for each speaker is also presented.

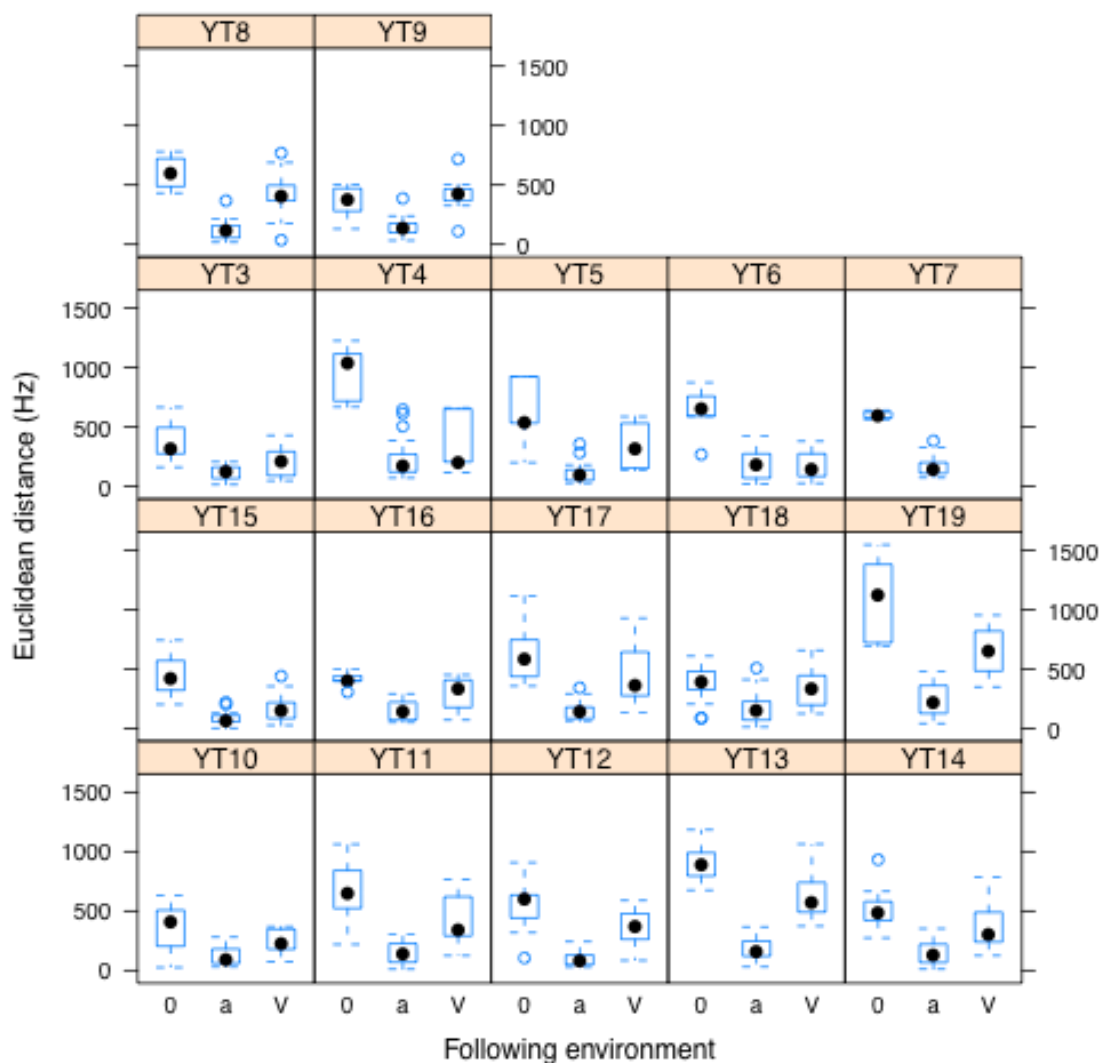


Figure 6.27. Distribution of trajectories for /aɪ/, by speaker

Although the small number of observations per speaker makes it difficult to summarize statistical differences between the different environments, a few observations can be made. For 18/19 speakers (all except speaker 9), pre-voiceless /aɪ/ tokens appeared to have a larger glide than /aɪ/ before voiced obstruents. Visual inspection of plots confirms that mean glides for pre-voiceless (ay) are longer than pre-voiced mean (ay) glides for most YT speakers. The (ay) glides in both environments show clear movement towards the /i/ vowel.

While none of the speakers show categorical glide reduction, vowel plots of their mean (ayV), (ay#), and (ay0) productions do reflect the differences found in the auditory analysis. Figure 6.2(a-c) shows F1-by-F2 vowel plots for three speakers, who, from left to right, have overall reduction rates of 0%, 26%, and 50%, respectively. The symbols in each plot represent mean formant values at the 20% point of each vowel class, and the arrowheads represent mean formant values at the 80% point of each vowel class. Thus, the arrow stems represent mean vowel trajectory. Plot 6.28(a) shows that (ay) glides were consistently robust, on average, in the pre-voiceless obstruent, pre-voiced obstruent, and open syllable contexts (labeled in the plots by “vcls”, “vcd”, and “open”, respectively). Plot 6.28(b) displays smaller mean glides in all environments, relative to 6.28(a), with the exception of the pre-voiceless obstruent position. Plot 6.28(c) displays extremely short mean glides before voiced obstruents and in open syllables, but again a long mean glide in the pre-voiceless context; note that this pattern matches descriptions of African American (ay) glide reduction in Thomas (2007).

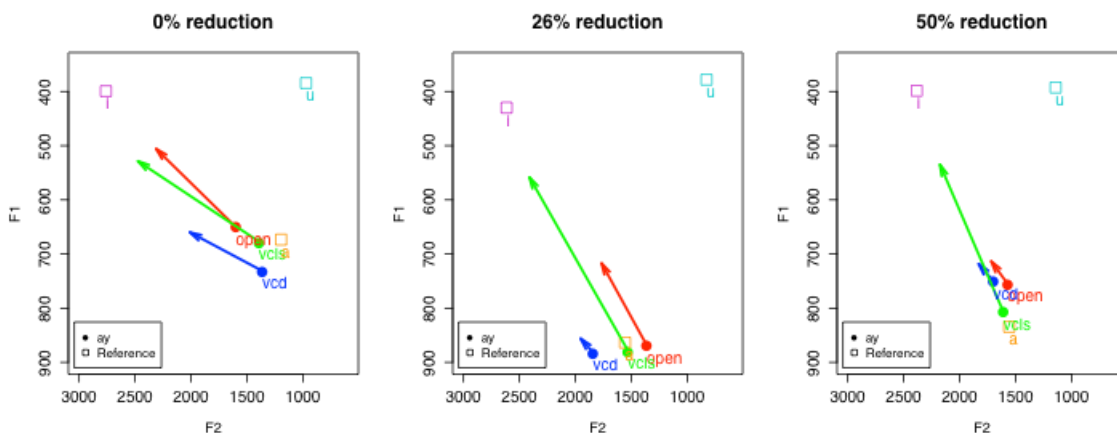


Figure 6.28. (ay) production for YT19 (0% reduction), YT4 (26% reduction), and YT6 (50% reduction), by environment

Regression results are summarized here (full regression output can be found in Appendix I). Vowel duration was significantly correlated with trajectory. Vowels of longer duration had longer overall trajectories ($p=0.000$) and longer $\Delta F1$ s ($p=0.000$). Speaker ethnicity was not found to contribute significantly to model fit and was not included in the final regression model. For $\Delta F1$, speaker ethnicity was found to interact with gender: European American men have longer $\Delta F1$ s than European American women, but African American women have longer $\Delta F1$ s than

African American men ($p=0.016$). African Americans had longer $\Delta F2$ s than European Americans ($p=0.000$), and the effect of ethnicity on $\Delta F2$ was larger for females ($p=0.000$) and larger for subjects familiar with the interviewer ($p=0.002$). Speakers familiar with the interviewer had shorter trajectories ($p=0.000$), shorter $\Delta F1$ s ($p=0.000$), and shorter $\Delta F2$ s ($p=0.018$), all other variables held constant.

Table 6.14 summarizes the significant results of the regressions of degree of gliding. There are consistent effects of duration and familiarity with the interviewer. To summarize ethnicity effects: African Americans have a longer glide along the F2 dimension than their European American counterparts, and African American women had larger $\Delta F1$ and $\Delta F2$.

Table 6.14. Significance of independent variables on YT /aɪ/ glide production

	$\Delta F1$	$\Delta F2$	Trajectory
speaker ethnicity	Yes, interaction w/ gender	Yes, Af-Ams show larger glide	No
duration	Yes, $\Delta F1$ increases w/ duration	Yes, interaction with ethnicity	Yes, trajectory length increases w/ duration
familiarity	Yes, $\Delta F1$ decreases w/ familiarity	Yes, $\Delta F2$ decreases w/ familiarity	Yes, trajectory length decreases w/ familiarity
gender	Yes, interaction w/ ethnicity	Yes, interaction with ethnicity	No

Positional effects on /aɪ/ were also found through regression analyses. Vowels of longer duration had a lower F1 at midpoint ($p=0.015$) and at the 80% point ($p=0.048$), and a fronter F2 at the 80% point ($p=0.000$). Vowel tokens had a lower F1 (higher vowel) at the 20% point when the speaker was familiar with the interviewer ($p=0.000$), and the effect was even larger when the speaker was African American ($p=0.015$). Familiarity also correlated with higher F1s at the 80% point of the vowel ($p=0.002$) and lower F2s at the 50% point ($p=0.009$) and 80% point of the vowel ($p=9.58e-05$).

Gender had a significant effect on vowel position: women showed higher F1 at vowel offset ($p=0.001$).

African Americans had a more fronted vowel than European Americans at midpoint ($p=0.037$) and at vowel offset ($p=2.07e-04$). The ethnicity difference at offset was stronger for men than women ($p=1.25e-05$). Speaker ethnicity interacted with other speaker variables. African Americans who were not familiar with the interviewer had a more fronted vowel onset than other subjects ($p=0.039$), and African Americans who were familiar with the interviewer showed a higher /aɪ/ onset than other subjects ($p=0.015$).

Table 6.15 summarizes the results of the regressions of vowel position, focusing on ethnicity effects on /aɪ/ production. YT African Americans have more gliding along the F2 dimension than their European American counterparts, and have more fronted offsets. Interactions between speaker ethnicity and familiarity at vowel onset were found for both F1 and F2.

This analysis focuses on ethnicity effects, and finds significant differences between the production of YT African Americans and European Americans in F2 towards the end of the vowel, and interactions between ethnicity and familiarity.

Table 6.15. Significance of independent variables for regressions of /aɪ/ vowel position

	F1_20	F1_50	F1_80	F2_20	F2_50	F2_80
speaker ethnicity	Yes	No	No	Yes	Yes	Yes
duration	No	Yes	Yes	Yes	No	Yes
familiarity	Yes	No	Yes	Yes	Yes	Yes
gender	No	No	Yes	No	No	Yes

6.3.6.3 Summary

Results confirmed all of the hypotheses regarding /aɪ/. In line with Scanlon & Wassink (2010a), YT speakers varied in the percentage of auditorily reduced /aɪ/ glide, and overall, African American YT speakers showed a higher proportion of glide reduction than European American YT speakers. Phonological environment effects were as expected from previous literature: glide reduction was most commonly found in the pre-voiced and open syllable contexts. Additionally, several significant differences in /aɪ/ production by ethnicity were found. Overall, African Americans reduced /aɪ/ at higher levels than European Americans. Confirming results

from Thomas (2001), African Americans had a longer pre-voiceless glide along the F2 dimension than their European American counterparts. Pre-voiceless /aɪ/ also showed positional differences by ethnicity: African Americans who were familiar with the interviewer showed a higher and more backed /aɪ/ onset than other subjects.

6.4 SUMMARY

This chapter examined production of 6 vocalic variables among YT speakers. To summarize the findings in light of the hypotheses made for each variable:

- The current study supports some but not all hypotheses for the PIN and PEN classes. While the current study found an ethnicity-based difference in PIN-PEN production – namely, YT African Americans had a lower PIN vowel than YT European Americans – the entire sample tended to show strong spectral overlap between the PIN and PEN classes, regardless of ethnicity. Also, the current analysis found no support for the hypothesis that degree of gliding differentiates the PIN and PEN classes for YT African Americans but not for YT European Americans; speakers from both ethnicities had comparable degree of gliding for the two vowel classes.
- Confirming the broad hypotheses for COT-CAUGHT production, YT African Americans distinguish their COT-CAUGHT production somewhat from European Americans in the community. More specifically, the analysis showed that YT African Americans had more distinct COT and CAUGHT classes and more fronted COT classes.
- While there was limited data for the BOWL and BULL classes, the available data suggests rejecting the hypotheses that all YT speakers have spectrally merged BOWL and BULL classes. While European American YT speakers have spectrally merged BOWL and BULL, African American YT speakers may distinguish BOWL and BULL along F1.
- Confirming the broad hypotheses for BEG-BAG-BAKE production, pre-velar BAG and BEG patterned differently for YT speakers than non-prevelar /æ/ and /ɛ/. Specifically, the sample consistently showed strong overlap between /eg/ and /ɛg/, and speakers in the sample consistently raised or fronted /æɪg/, though it remained distinct from the first two vowel classes. In contrast with some PNWE speakers in Riebold (2014), YT speakers do distinguish non-pre-velar /æ, e, ɛ/.

- Confirming the broad hypotheses for high back vowels, YT speakers consistently fronted the TOOT and BOOK classes, and consistently did not front the BOAT class. Additionally, the analysis showed that most speakers did not front the BOOT class, though a small number did show some fronting. Confirming hypotheses for /aɪ/, YT African Americans distinguish their /aɪ/ production in various ways from European Americans in the community. More specifically, YT African Americans showed higher levels of overall /aɪ/ reduction, longer pre-voiceless change in F2 over the course of the vowel, and higher /aɪ/ onsets for speakers who were both African American and familiar to the interviewer.

These findings have implications for our understanding of vowel production in the Pacific Northwest, which will be discussed in §9. While the current chapter explicates inter-speaker variation within YT, the next two chapters build on the results of the current chapter by analyzing intra-speaker variation within this sample.

Chapter 7. CASE STUDY – JEAN HARRIS

7.1 INTRODUCTION

This chapter describes a case study looking at variation in vowel production for one African American YT member who conducted the YT interviews. Jean Harris' production of three linguistic variables (/ɑɪ/, PIN-PEN, and COT-CAUGHT) is examined to see whether her intra-speaker variation for these three variables mirrors the ethnicity-based variation we see for these variables in the larger YT sample, and to ask if there are other social factors that might reasonably account for her use of these variables. This chapter takes an Audience Design approach (see §2.2.2), by examining where Jean changes her speech based on features of her interlocutor (i.e., identifying Situational shifts; see §2.3.1). My focus is on these three variables because 1) they are relatively high-frequency, and there are enough tokens of each in Jean's speech across interviews to facilitate analysis⁹; and 2) they are variables that show ethnicity-based variation within the YT community, and in an Audience Design framework it is argued that intra-speaker variability is related to the variability we see at the community level (Bell 1984, 2001). This study is relatively unique within Audience Design approaches, though, because it studies variability in one interviewer (but see Trudgill, 1986).

This study presents /ɑɪ/ and PIN-PEN data from Scanlon and Wassink (2010), and supplements it with an analysis of *cot-caught* merger. /ɑɪ/ reduction and PIN-PEN merger are variants associated strongly with AAL, especially in regions like the Pacific Northwest where they are not often found in the speech of non-African American speakers. COT-CAUGHT merger, in contrast, is understood as a characteristic Western vowel variant, whose position was found to contrast in European American and African American YT speakers (§6).

⁹ This criterion excludes BULL-BOWL from analysis in this chapter, even though the available data suggests these vowel classes are produced differently by YT speakers of different ethnicities (§6).

7.2 METHODS

7.2.1 Methods for all variables

Tokens of /aɪ/, PIN, PEN, COT, and CAUGHT were extracted from mono- and bisyllabic words across interviews where Jean was the interviewer. No more than three tokens per word were extracted for each interview. Vowels were measured acoustically as described in §6.4, and the following measures were used for analysis: F1 and F2 at onset (20%), midpoint (50%), and offset (80%); $\Delta F1$, $\Delta F2$, and degree of gliding (F1-F2 Euclidean distance).

Tokens were coded for a number of interlocutor factors. Interlocutor ethnicity, as self-identified by the interlocutor during the interview, was coded for each token. Tokens extracted from Jean's speech were coded for the /aɪ/ reduction rate of the interlocutor (as a percentage of the interlocutor's total /aɪ/ tokens). Jean's interlocutors were also coded as "familiar" or "non-familiar," on the basis of interview content, as described in §6.2.5.

While Jean shows familiarity with the majority (14/18) of her interlocutors, the sample includes both African American (n=2) and European American non-familiar (n=2) interlocutors. All three variables are analyzed using regression analyses, to take into account the multivariate nature of the data. The inclusion of multiple interlocutor variables (i.e., ethnicity and familiarity) in the regression analyses amounts to a multidimensional analysis of style. It was possible to code and analyze interlocutor ethnicity and familiarity simultaneously, as the interlocutor sample includes all four demographic possibilities (tally shown in Table 7.1).

7.2.2 Methods - /aɪ/

A total of 342 /aɪ/ tokens were extracted from interviews. Tokens were coded by following environment (nasal, /r/, /l/, voiced obstruent, voiceless obstruent, open syllable). Tokens were also coded as diphthongal or reduced. Interlocutor's /aɪ/ reduction rates are drawn from §6 and are presented as percentage reduced /aɪ/ tokens, coded auditorily; Jean's /aɪ/ reduction rate was similarly calculated for each interview. Jean's reduction rates are summarized by interlocutor ethnicity, interlocutor reduction rate, and interlocutor familiarity. Binomial stepwise regressions of F1 at onset, F2 at onset, $\Delta F1$, $\Delta F2$, and glide reduction (as diphthongal or reduced) were

performed on the independent variables of interlocutor ethnicity, interlocutor reduction rate (as a percentage), interlocutor familiarity, following phonological environment, and interactions. Because of low token counts for /aɪ/ before liquids, these tokens were excluded from the regression analysis.

7.2.3 Methods – PIN-PEN

128 total tokens of the PIN and PEN classes were extracted from the interviews and measured (91 PEN, 37 PIN). Tokens were coded by preceding place of articulation (bilabial, labiodental, dental, alveolar, post-alveolar, velar, glottal). Tokens were also coded for number of syllables and voicing of the preceding environment (after Brown 1990).

A plot of Jean's PIN and PEN vowels was visually inspected. Conventional and alternative statistical tests of merger were conducted. Paired t-tests were used to evaluate if there was a difference between PIN and PEN F1 and F2 values at midpoint (after Labov et al. 1991). Three alternative tests of merger were run. First, regressions of PIN and PEN F1 and F2 values at midpoint were conducted, in order to control for any environmental effects, and to test for an effect of vowel class or an effect of interlocutor characteristics. Second, a regression of Euclidean distance on vowel class was run, to determine if PIN and PEN differ in degree of gliding, or if Jean shows different Euclidean distances by interlocutor ethnicity. Third, a regression of duration on vowel class was run, to determine if PIN and PEN differ in duration, or if Jean shows different vowel durations by interlocutor ethnicity. A Pearson's correlation test between duration and Euclidean distance was conducted in order to evaluate the relationship between duration and degree of gliding for PIN-PEN.

7.2.4 Methods – COT-CAUGHT

A total of 398 tokens of the COT and CAUGHT classes were extracted from the interviews and measured (215 COT, 183 CAUGHT). Tokens were coded by preceding and following place of articulation (labial, alveolar, velar, glottal, open). A plot of Jean's COT and CAUGHT vowels was visually inspected for clear cases of lexical outliers (i.e., *got*, as described in §6). As described below, *got* does appear to be a lexical outlier in Jean's speech, so all *got* tokens were analyzed as a separate class in the analyses below.

One-way ANOVAs and post-hoc Tukey tests were conducted to evaluate differences between COT, *got*, and CAUGHT F1 values at midpoint and F2 values at midpoint. Regressions of F1 and F2 values at midpoint were conducted, in order to control for any environmental effects and to test for an effect of vowel class or an effect of interlocutor characteristics.

7.3 RESULTS

7.3.1 Results - /aɪ/

Jean reduces /aɪ/ with African Americans 21%, versus just 3% of the time with European Americans. Tables 7.2 and 7.3 show these results, broken down by interlocutor ethnicity and phonological environment.

Table 7.1. Token counts from auditory analysis of Jean

	reduced	diphthongal	total	% reduced
<i>Caucasian</i> (<i>n=4</i>)	2	58	60	3%
<i>African American</i> (<i>n=14</i>)	60	222	282	21%
<i>Total</i>	62	280	342	18%

Table 7.2. Token counts from auditory analysis of Jean

	Open	_Nasal	_r	_l	_Vcd	_Vcls
<i>Caucasian</i> (<i>n=4</i>)	0/6 (0%)	2/20 (10%)	0/1 (0%)	0/1 (0%)	0/21 (0%)	0/11 (0%)
<i>African American</i> (<i>n=14</i>)	14/40 (35%)	19/79 (24%)	2/5 (40%)	6/13 (46%)	14/106 (13%)	5/39 (13%)
<i>Total</i>	14/46 (30%)	21/99 (21%)	2/6 (33%)	6/14 (43%)	14/127 (11%)	5/50 (10%)

There is some variability in environmental effects based on ethnicity of interlocutor, but in general, Jean reduces the most before liquids and the least before voiced and voiceless obstruents, with /aɪ/ in open syllables and before nasals reduced at intermediate rates.

Figure 7.1 compares Jean's reduction rates directly with those of her interlocutors. Each point represents percent reduced /aɪ/ in one conversation between Jean and an interlocutor. Jean's reduction rates are plotted as y-values, and her interlocutors' reduction rates as x-values. A perfect correlation between Jean's reduction rates and those of her interlocutors would result in plot values that fall along a line at a 45-degree angle.

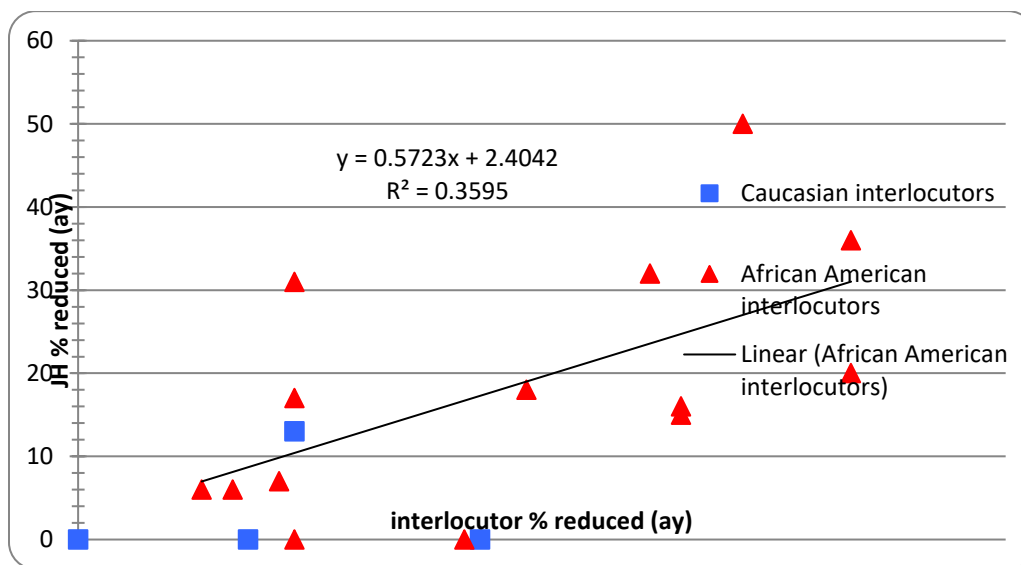


Figure 7.1. Jean's /aɪ/ reduction rates vis-à-vis interlocutors'

The graphs provide clear evidence that Jean reduces at higher rates with interlocutors who show high reduction rates themselves. Jean reduces /aɪ/ 28% of the time with high-reducing African American interlocutors, versus only 11% with low-reducing African American interlocutors.

Table 7.4 summarizes Jean's reduction rates by familiarity of interlocutor; on the whole, Jean reduces at a greater rate with familiars (20%) than with non-familiars (11%).

Table 7.3. Jean's /aɪ/ production, by interlocutor familiarity

	reduced	diphthongal	total	% reduced
<i>Familiars</i> (<i>n=12</i>)	42	172	214	20%
<i>Non-familiars</i> (<i>n=6</i>)	12	96	108	11%

On the face of it, interlocutor ethnicity, phonological environment, interlocutor reduction rate, and familiarity all play a role in the Jean's reduction of /aɪ/.

The regression analysis shows that these variables are not always significant predictors of glide reduction (full regression results can be found in Appendix J). Familiarity was not found to have a significant effect on the auditory analysis of glide reduction. However, Jean reduces glides more with high-reducing interlocutors than low-reducing interlocutors ($p=0.003$). Environment was also significant; Jean was less likely to reduce glides before voiced obstruents than in open syllables ($p=0.006$), and less likely to reduce glides before voiceless obstruents than in open syllables ($p=0.027$). Interlocutor ethnicity was marginally significant, at $p=0.089$.

Figure 7.2 shows an F1-by-F2 plot of Jean's averaged /aɪ/ values, broken down by interlocutor ethnicity and phonological environment. Filled circles represent mean values of productions uttered to European American interlocutors; unfilled squares, African-American interlocutors. The length of the arrow indicates degree of gliding for each vowel category; the symbol reflects the mean 20% point of the vowel, and the arrowhead reflects the mean 80% point of the vowel. The plot, then, graphically shows a number of summary statistics for Jean's glide production:

vowel position at the 20% and 80% points, $\Delta F1$, $\Delta F2$, and Euclidean distance, as well as direction of glide.

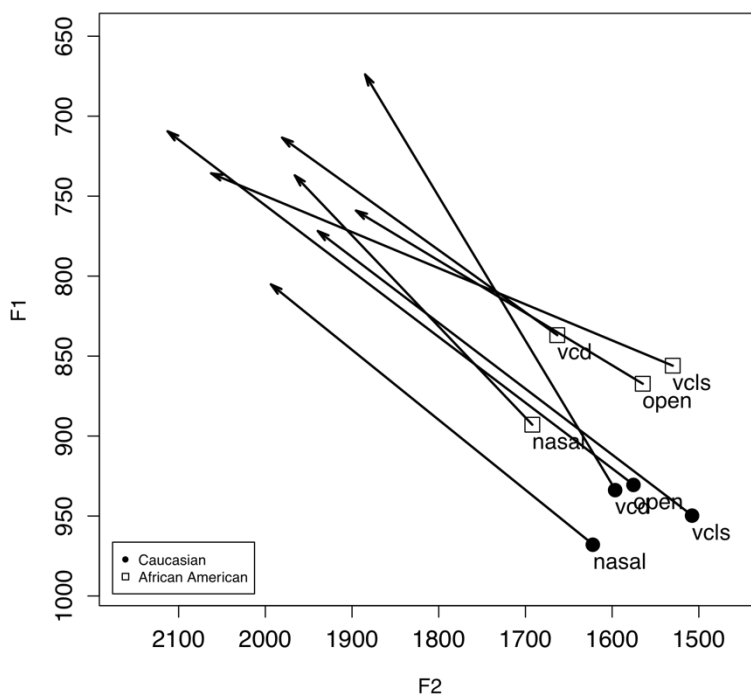


Figure 7.2. F1-by-F2 vowel plot of /aɪ/ for Jean, by following environment and interlocutor ethnicity

On average, F1 values at onset (marked with a symbol in the above figure) were 85 Hz higher when the interlocutor was African American than when the interlocutor was European American ($p=0.000$) holding environment constant. Environment, familiarity, and interlocutor reduction rate were not found to have a significant effect on F1 at onset. Regression results for F2 at onset showed that familiarity and following environment had significant effects on F2 at onset, but interlocutor ethnicity and interlocutor reduction rate did not contribute to model fit.

Interlocutor ethnicity and reduction rate both have a significant effect on $\Delta F1$; environment and familiarity were not found to have a significant effect on $\Delta F1$. Jean shows 55 Hz greater change in F1 with European Americans than African Americans, holding other factors constant ($p=0.021$). An increase of 10 percent in interlocutor rate is correlated with F1 movement that is 12 Hz shorter, holding other factors constant ($p=0.046$).

Environment and familiarity have significant effects on $\Delta F2$; ethnicity and interlocutor rate were not found to have a significant effect. In most phonological environments, Jean was not found to shift the degree of gliding along the F2 dimension, but F2 shows more gliding in the pre-voiceless environment with familiars ($p=0.023$), holding other factors constant.

Interlocutor rate, familiarity, and environment have a significant effect on Euclidean distance; ethnicity is not found to be significant. An increase in interlocutor reduction rate corresponds with a smaller Euclidean distance ($p=0.024$). The interactive effect found for change in F2 persists for Euclidean distance: prenasally, there is no difference in Euclidean distance between speech to familiars and speech to non-familiars, but before voiceless segments, Jean's glides are longer with familiars ($p=0.028$).

Table 7.5 provides an overview of the statistical tests. 'Yes' denotes a significant effect of the independent variable, and 'no' denotes that no significant differences were found.

Table 7.4. Summary of significant results from /aɪ/ regression analyses

	auditory analysis	F1 at onset	F2 at onset	$\Delta F1$	$\Delta F2$	Euclidean Distance
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<i>interlocutor ethnicity</i>	marginally	yes	no	yes	no	no
<i>interlocutor reduction rate</i>	yes	no	no	yes	no	yes
<i>environment</i>	yes	no	yes	no	yes	yes
<i>familiarity</i>	no	no	yes	no	yes	yes

To summarize results for /aɪ/: Jean’s linguistic shifts fall along several dimensions. She showed a higher vowel at onset with African Americans than with European Americans, in a clear case of a shift in vowel quality. Differences along single dimensions, such as in F1 and F2 movement, were found, as were differences in multiplex vowel characteristics, such as Euclidean distance and auditory impressions. The most robust positional difference by ethnicity, F1 height, mirrors some inter-speaker differences found in §7: just as African American YT speakers produce a higher /aɪ/ onset than European American speakers, Jean produces a higher /aɪ/ onset with African American interlocutors than with European American interlocutors. While §6 identified differences in F2 production based on speaker ethnicity – African American speakers had a fronter F2 than European American speakers at midpoint and offset – Jean did not show differences in F2 by interlocutor ethnicity.

7.3.2 Results – PIN-PEN

Number of syllables and voicing of the preceding environment were not found to affect PIN-PEN production in the statistical analyses. Preceding place of articulation was found to be significant in the regression analyses, but since it was included only as a controlling factor, the results are not described here.

Figure 7.3 shows an F1-by-F2 plot of Jean’s averaged PIN and PEN class data, broken down by interlocutor ethnicity. (The PIN class is graphically represented with “in”, and the PEN class with “en”.) To provide a sense of the location of these vowels in the wider system, means for /ɪ/ and /ɛ/ in non-prenasal contexts and for /i/, /u/, and /a/ are also displayed for comparison.

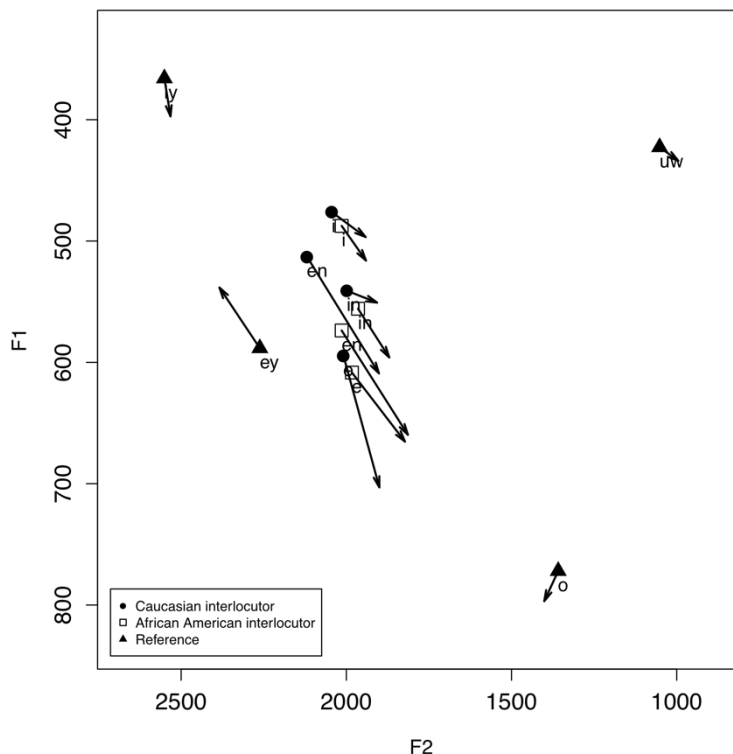


Figure 7.3. F1-by-F2 vowel plot of PIN-PEN for Jean, by interlocutor ethnicity

A few observations about Jean's vowel plot can be made. First, the PIN and PEN classes both have a downward and centralizing glide. The prenasal classes are proximal to [ɛ] with African American interlocutors (symbols with open squares), but with European American interlocutors (filled circles), the prenasal classes appear to be in a position between [ɪ] and [ɛ]. The PEN class with European American interlocutors appears to start in a higher and more fronted position than the other three prenasal classes. Lastly, there appears to be a difference between the /ɛ/ and /ɪ/ classes in degree of gliding; /ɛ/ shows a longer glide than /ɪ/. This difference holds prenasally as well.

T-tests of F1 and F2 for PIN and PEN at midpoint did not show PIN and PEN to be significantly different, although PEN has a marginally lower height than PIN, at $p=0.061$.

Familiarity was included as an independent variable in the PIN-PEN regression analysis, but was not found to be significant in any of the following regressions (full PIN-PEN regression results

can be found in Appendix K). For regressions of F1 and F2 at midpoint, ethnicity was a significant factor; F1 was 72 Hz lower with European American interlocutors than with African American ones ($p=0.012$). Vowel class was not found to be significant in the midpoint regression analyses.

The regressions of Euclidean distance and duration did show vowel class as a significant factor. The PIN class was, on average, shorter than the PEN class ($p=0.001$), and PIN was, on average, 30 ms shorter than PEN ($p=0.001$), holding other factors constant. Euclidean distance and duration appear closely related as they show a strong correlation (0.762, $p=0.000$). Also, there was an interactive effect on Euclidean distance. PIN and PEN Euclidean distances were more distinct than /ɪ/ and /ɛ/ in non-prenasal contexts, holding other factors constant ($p=0.044$). The same interaction pattern emerged in the regression of auditory impression on vowel class. Nasals were more likely to be coded as diphthongal ($p=0.003$), and PEN was more likely to be coded as diphthongal than PIN, holding other factors constant ($p=0.027$). Interlocutor ethnicity and interlocutor familiarity were not found to be significant predictors of degree of gliding, duration, or auditory impression.

To summarize the results of the *pin-pen* analysis: Jean shows higher PIN and PEN vowels with European Americans than with African American interlocutors; the prenasal and non-prenasal /ɛ/ classes have a greater degree of gliding and longer duration than the prenasal and non-prenasal /ɪ/ classes; the PIN and PEN classes were more distinct than /ɪ/ and /ɛ/ non-prenasally, and the auditory analysis also shows greater differentiation in the prenasal condition. The difference by ethnicity is similar to that found in §7; YT European Americans have a higher PIN vowel than YT African Americans, and Jean shows higher PIN and PEN with European American interlocutors.

7.3.3 Results – COT-CAUGHT

Jean's 'got' tokens were not found to be different in height from other COT vowels (mean for 'got'=868 Hz, mean for other COT vowels=879 Hz, $p=0.584$), but were significantly more fronted than other COT vowels (mean for 'got'=1663 Hz, mean for other COT vowels=1446 Hz, $p=0.000$). Figure 7.4 shows an F2-by-F1 vowel plot of COT tokens, with tokens of *got* in red and

all other COT tokens in black. For the analyses below, *got* tokens are analyzed as a separate class.

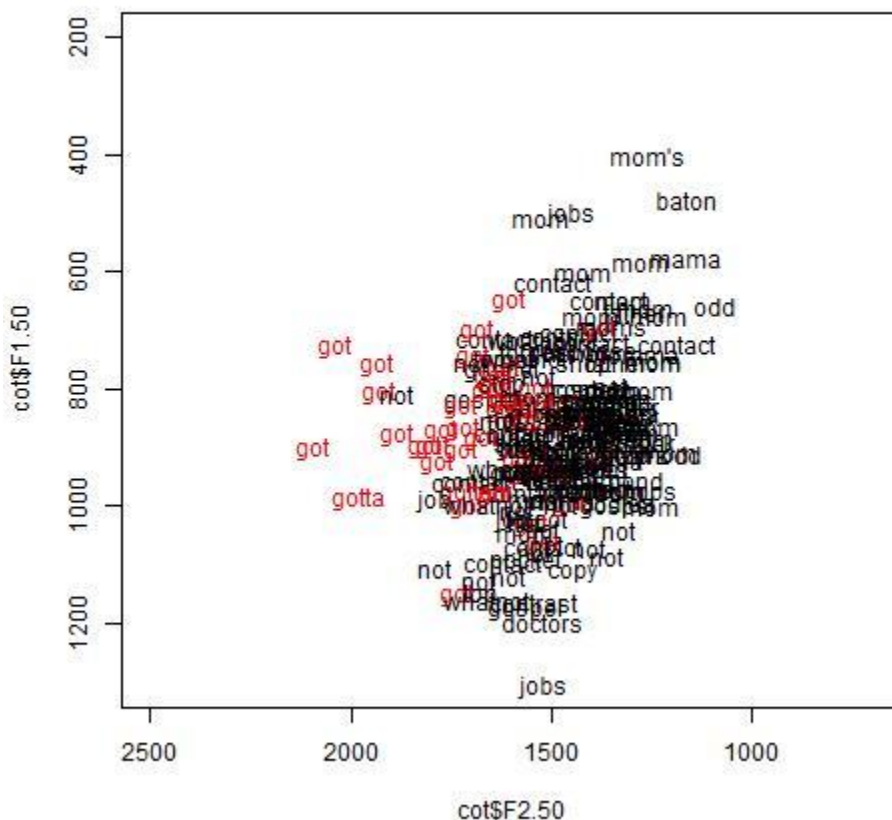


Figure 7.4. Vowel plot of COT tokens; *got* tokens in red

Jean's COT, *got*, and CAUGHT classes have comparable heights (mean F1 for COT=879 Hz, mean F1 for *got*=868 Hz, mean F1 for CAUGHT=868 Hz, $F(2,395)=0.334$, $p=0.972$), but an analysis of variance on F2 values yielded significant variation among the three classes [$F(2,395)=60.76$, $p=0.000$]. (All COT-CAUGHT ANOVA and regression results can be found in Appendix L.) A post hoc Tukey test showed that all three classes differed in fronting significantly at $p<.05$ (mean F2 for COT=1446 Hz, mean F2 for *got*=1663 Hz, mean F2 for CAUGHT=1404 Hz). Figure 7.5 shows an F2-by-F1 vowel plot of COT, *got*, and CAUGHT tokens, and also shows a boxplot of F2 values for the three classes.

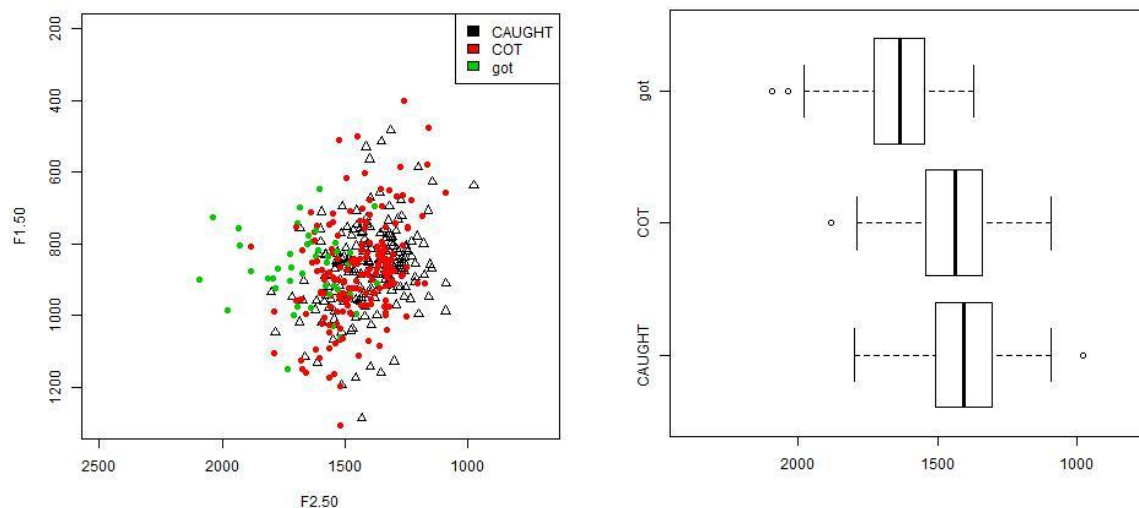


Figure 7.5. F1-by-F2 plot of low back vowels at midpoint; (b) Boxplot of F2 values for low back vowels

A stepwise regression of F2 at midpoint on vowel class (COT, got, CAUGHT), interlocutor ethnicity, preceding and following place of articulation, and interactions was conducted. Regression results showed that on average and holding other factors constant, *got* F2s were 263 Hz higher than CAUGHT tokens ($p=0.000$), and COT F2s were on average 87 Hz higher than CAUGHT tokens ($p=0.000$). A significant interaction between vowel class and ethnicity was found; while Jean showed marginally higher F2s overall for tokens spoken with European American versus African American interlocutors (42 Hz difference, $p=-.064$), *got* F2s were significantly lower with European American interlocutors (133 Hz difference, $p=0.018$). Differences in CAUGHT production with European American versus African American interlocutors were marginally significant (on average 42 Hz higher with European American interlocutors, $p=0.064$). Figure 7.6 shows a boxplot of the predicted F2 midpoint values from the regression analysis, split by vowel class and ethnicity. Jean's COT values are similar for European American and African American interlocutors, but her CAUGHT tokens are slightly more backed with African American interlocutors, and her *got* tokens are more fronted with African American interlocutors.

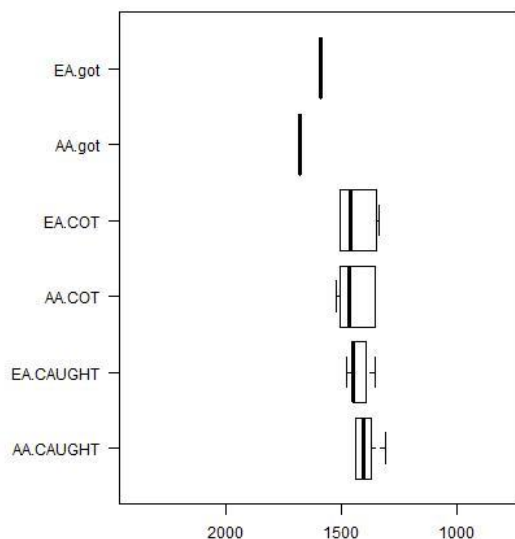


Figure 7.6. Predicted *got*, COT, and CAUGHT F2 values at midpoint, by ethnicity

Interlocutor familiarity was not found to be a significant predictor in the low back vowel regression analysis.

To summarize the COT-CAUGHT results: Jean shows distinct lexical fronting of *got*, and she distinguishes the COT and CAUGHT classes somewhat along F2. Interlocutor familiarity was not found to be a predictor of Jean's COT-CAUGHT production, but vowel class did interact with ethnicity: Jean showed more distinct vowel classes with African American interlocutors than with European American interlocutors. The differences by ethnicity are similar to those found in §7; YT African Americans show a larger distinction along F2 between the COT and CAUGHT classes than YT European Americans, and for Jean the difference in F2 between the COT and CAUGHT classes is largest with African American interlocutors.

7.4 DISCUSSION

For all three variables examined, Jean showed differences in production based on the ethnicity of her interlocutor. The results also elucidate the multidimensional nature of Jean's /aɪ/ style-shifting; we have evidence that Jean shifts her /aɪ/ production rates according to interlocutor ethnicity, interlocutor reduction rate, and interlocutor familiarity. The analysis allowed us to separate the effects of interlocutor ethnicity and interlocutor reduction rate to show that both had

significant effects of /aɪ/ production. So, Jean shifts her speech according to both the personal characteristics of the addressees and according to the level of addressees' speech. As in Trudgill (1986) and Coupland (1980), there is evidence of accommodation; Jean shifts her /aɪ/ production to approximate the levels of reduction in her interlocutors. The PIN-PEN and COT-CAUGHT analyses showed that, in contrast, these two variables varied only by interlocutor ethnicity and not by interlocutor familiarity or interlocutor reduction rate.

For each variable, ethnicity-based variation that Jean showed paralleled ethnicity-based variability in the larger YT sample. The PIN and PEN classes show F1 differences across ethnicity in YT and by interlocutor ethnicity in Jean's speech. COT and CAUGHT are more distinct among African American YT speakers and in Jean's speech with African American interlocutors. African American YT speakers produce a higher /aɪ/ onset than European American speakers, and Jean produces a higher /aɪ/ onset with African American interlocutors. The patterning of /aɪ/, however, is more complex. It appears that with familiar interlocutors, Jean shows a longer glide in the prevoiceless context. The pattern is analogous to the predominant pattern of /aɪ/ glide reduction among African Americans (see Thomas, 2007), but the main predictor of this behavior is interlocutor familiarity, not interlocutor ethnicity. Jean's reduction patterns imply that an AAL feature is not (solely) being used to signal a response to the ethnicity of her interlocutor along the F2 dimension, but rather signals a response to the familiarity of her interlocutor.

7.5 SUMMARY

This chapter conducted an analysis of a single speaker's stylistic variation for three variables that have either associations with ethnicity or place. It found similarities between the ethnicity-based differences in vowel production found in §6 and Jean's variability based on ethnicity of her interlocutor. Additionally, for /aɪ/ in particular, Jean's speech shows multidimensional stylistic shifts, based on the ethnicity of her interlocutor, the familiarity of her interlocutor, and the /aɪ/ reduction rate of her interlocutor. With this analysis, we have more information about how a YT speaker uses variables associated with AAL and with the Pacific Northwest as linguistic resources. While this chapter used an Audience Design approach to examine Situational shifts for these three variables, this approach is not able to identify Metaphorical uses of variables

associated with AAL. To investigate Metaphorical shifts, the next chapter uses a Speaker Design approach to further examine the social meaning of /aɪ/ in practice.

Chapter 8. INTERACTION ANALYSIS

8.1 INTRODUCTION

This chapter describes an analysis of intra-speaker variation in /aɪ/ production for four study participants. The participants were selected to control for gender and familiarity with the interviewer, and for equal numbers by speaker ethnicity. In contrast to Chapter 7, which took an Audience Design approach, the current chapter analysis takes a Speaker Design approach, which allows us to consider intra-speaker shifts in the context of unfolding talk, and observe how speakers utilize linguistic resources to achieve their conversational goals in interaction. This analysis aims to answer the questions: when is the reduced form of /aɪ/ used, and what does its use signal? Qualitative characterization of /aɪ/ will be along two dimensions, *indexicality* and *coherence* (Bucholtz and Hall 2005):

Indexicality: Is the use of /aɪ/ limited to signal some aspect of Blackness, or is there sufficient evidence that its use is broader? In other words, does its use reflect macro-level demographic categories; does it signal local, ethnographically specific cultural positions; or is it associated with temporary and interactionally specific stances and participant roles?

Coherence: Is /aɪ/ used alongside other linguistic variants associated with AAL? In other words, is the use of reduced /aɪ/ as an AAL marker coordinated with other AAL variants to make a relatively robust signal? Or is there evidence of metaphorical use of reduced /aɪ/, separate from the use of other AAL markers?

Here we focus on /aɪ/ usage because of its status as a salient variable associated with AAL. This analysis looks at the speech of both self-identified African Americans and European Americans, with the understanding that the social meaning of linguistic variables is co-constructed across ethnic lines in diverse communities. It makes a case for the use of Serendipitous Metaphorical style shifting (see §2.3.1) in AAL, and hypothesizes that /aɪ/ reduction varies according to speaker, ethnicity, lexical constraints, and conversational topic.

8.2 BACKGROUND

Because the analysis described in this chapter is unique and tailored to this particular study, some background is necessary – in particular, to justify using an inductive method for this analysis. As discussed in §2, interactional factors may influence how individuals present themselves from moment to moment, and the particulars of interaction might be orderly only at the level of the singular occurrence, and not necessarily orderly at the aggregate level. For this reason, even a detailed account of the most frequent or highest-propensity linguistic forms may not give us a full understanding of how linguistic forms associated with AAL are used in situated speech practices. Rather, there is a need to take a detailed look at salient yet low-frequency use of style shifting to identify the social meaning of linguistic variables associated with AAL (Snell 2010, Rickford 2014). Rather than describe relatively consistent patterns of variation across an individual’s speech, we can observe stretches of speech when language is more flexible, granular, and differentiated, and exchanges where a speaker may, in the words of Goffman (1981), “present [oneself] to [one’s] listeners on a changed footing” (73). A *post-hoc* analysis taking this approach is a form of *analytic induction*; stretches of speech that do not fit the inductively constructed pattern warrant particular attention (Peräkylä 2011).

8.3 METHODS

The four male speakers included in the analysis here were all familiars to the interviewer, and the sample was balanced for ethnicity (African American and European American). Additionally, YT22 and YT16 were best friends in the Terrace growing up and continue to be best friends today. Table 8.1 describes relevant demographic information for the sample of speakers.

Table 8.1. Speakers for interaction analysis

Subject	Ethnicity	Gender	Familiar to interviewer?
YT10	African American	Male	Yes
YT22	African American	Male	Yes
YT16	European American	Male	Yes
YT18	European American	Male	Yes

8.3.1 *Vowel analysis*

First, a by-speaker quantitative analysis of /aɪ/ reduction was performed. Individual /aɪ/ tokens were auditorily coded as either reduced or fully diphthongal, thus carving continuous phonetic space into discrete variants. This method was chosen primarily because it provides an easy-to-interpret account of /aɪ/ reduction while allowing that across individual speakers, the acoustic correlates of /aɪ/ reduction may vary to some extent.

Tokens of /aɪ/ in this analysis were examined for the co-occurrence of marked phonological, morphosyntactic, and intonational variants associated with AAL to understand how these different variants may be used in discourse alongside /aɪ/ production. Comparison alongside several variables will yield more detail and insight as to what extent a variable is used as part of a discrete lect. The variables considered include:

- Grammatical variables such as possessive pronoun they (e.g., It's they book), copula/auxiliary absence (e.g., She nice; Rickford 1999, Wolfram 2004);
- Phonological variables such as reduction of word-final consonant clusters (e.g., han' for standard English hand) and th-stopping (e.g., den for standard English then; Rickford 1999);
- Prosodic variables such as L+H* pitch contour to signal narrow focus (McLarty 2015, Holliday 2016).

8.3.2 *Interaction analysis*

An interaction analysis of /aɪ/ reduction was conducted. The interaction analysis is derived from Sharma and Rampton (2014), because of the method's strength in identifying intra-speaker

micro-fluctuations in speech, and its utility for making comparisons across speakers. However, some large differences exist between the original methodology and the current analysis. Sharma and Rampton (2014) identified sets of variables that constitute specific macro-social lectal groupings, but acknowledged that tracking individual variables is a more data-driven approach for situations where broad indexical values of a variant are unclear (i.e., cannot be directly described as part of a lect), or where variants contribute to a lect with varying degrees of strength and specificity. The focus of this chapter is on the meaning of /aɪ/, not the usage of AAL; to avoid presupposing the existence of a unified ethnolect, the current chapter focuses primarily on one variable, and attempts to responsibly describe how /aɪ/ covaries with other variants associated with AAL.

The interaction analysis consists of the following steps:

1. First, a given extract is segmented into units. For the present analysis, the entire interview was segmented into individual minutes. Second, utterances were coded for topic.
2. Next, each unit is coded for tokens of /aɪ/.
3. Proportions of reduced /aɪ/ were calculated and compared for segments of interest. For the current analysis, the number of reduced and fully diphthongal /aɪ/ tokens during each minute are summarized, as an initial step. As a next qualitative exploratory step, segments that appeared to have a relatively high or low proportion of reduced /aɪ/ were examined for themes or interactional stances that coincide with the segment. Based on the possibility that /aɪ/ reduction might differ across phonetic contexts, patterns of reduction for prevoiced /aɪ/ were analyzed separately from patterns of reduction for /aɪ/ in prevoiced contexts.

Figure 8.1 shows an example of the process used for the interaction analysis. On the left are three segments of speech, with four tokens of prevoiced /aɪ/ in each segment. Each instance of prevoiced /aɪ/ is followed by a rough phonetic transcription ([aɪ] for diphthongal tokens, and [a:] for reduced tokens). Diphthongal tokens are highlighted in gray, and reduced tokens highlighted in blue. On the right is a graph summarizing the number of diphthongal and reduced /aɪ/ tokens in each segment. Based on this small example, one might conclude that the reduction rate in the

third segment appears substantially higher than in the first two segments, and look for possible reasons for the increase in /aɪ/ reduction.

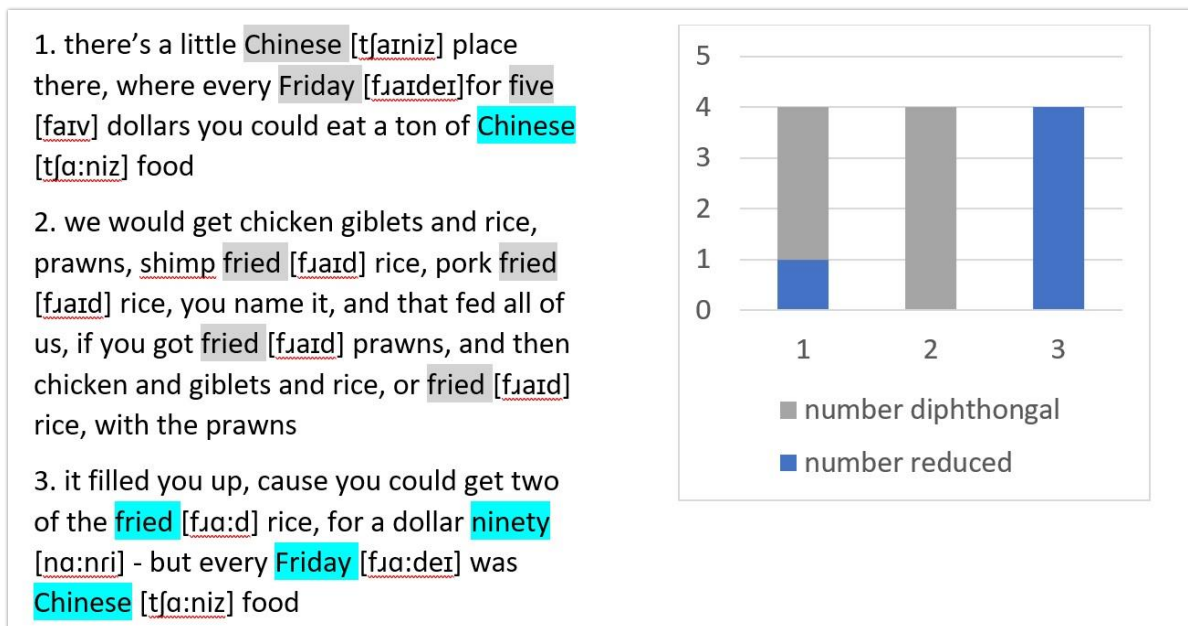


Figure 8.1. PIN and PEN trajectories for African American subjects

The identification of relevant segments to focus on is dependent on recognizing differences in patterning between segments. While a single minute of an interview may look quantifiably different from the speech around it, it is less clear whether such variation is intended or interpreted as a change in linguistic approach. Longer stretches of speech are more easily identified as differentiated from the surrounding stretches of speech. Where possible, pertinent stretches of speech were labelled by coded topic. Metalinguistic commentary and example quotations are included where possible to offer support for interpretation of linguistic variables and their relationship to the YT community.

8.4 RESULTS

8.4.1 Results - vowel analysis

Table 8.2 and Figure 8.2 show the /aɪ/ reduction rates for all 4 speakers, broken down into pre-voiceless and prevoiced contexts.

Table 8.2. /aɪ/ reduction, by following environment

Subject	Ethnicity	Prevoiceless /aɪ/ reduction (%)	Prevoiced /aɪ/ reduction (%)
YT10	African American	4/45 (9%)	57/137 (42%)
YT22	African American	12/70 (16%)	44/153 (27%)
YT16	European American	20/82 (22%)	26/159 (16%)
YT18	European American	2/42 (5%)	12/95 (13%)

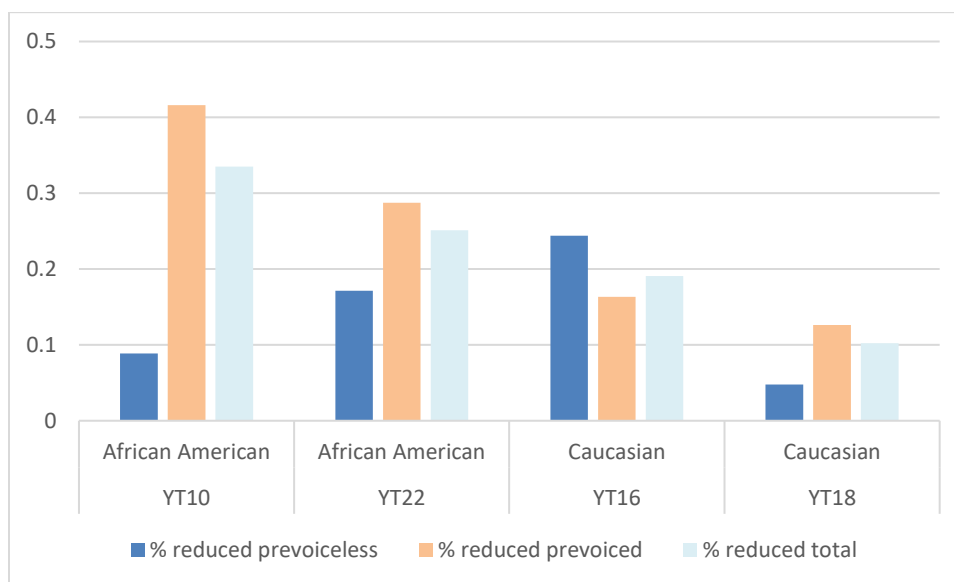


Figure 8.2. Proportion /aɪ/ reduction, by following environment

In the prevoiced context, we see levels of /aɪ/ reduction comparable to the total reduction rate, and the subjects retain their order from higher-reducing to lower-reducing. In the pre-voiceless context, YT10 and YT18 both have near-zero levels of /aɪ/ reduction, while YT22 and YT16 have substantially higher levels of pre-voiceless reduction. In the case of YT16, his pre-voiceless reduction rate exceeds the rate of reduction in the prevoiced environment. For these two speakers, reduced /aɪ/ in the pre-voiceless environment is limited to specific lexical items. Figure 8.3 shows counts of reduced and diphthongal vowels for all pre-voiceless words that are reduced somewhere in the sample. Speaker YT22 reduces 12/70 pre-voiceless /aɪ/ tokens (16%). Interestingly, all of his reduced pre-voiceless /aɪ/ tokens are in the word *right*. Speaker YT16 appears to reduce *right* at relatively high levels (6/18 tokens, or 33% versus an overall pre-voiceless reduction rate of 22%). *Like* is also reduced at high levels for YT16 (11/26, 42%).

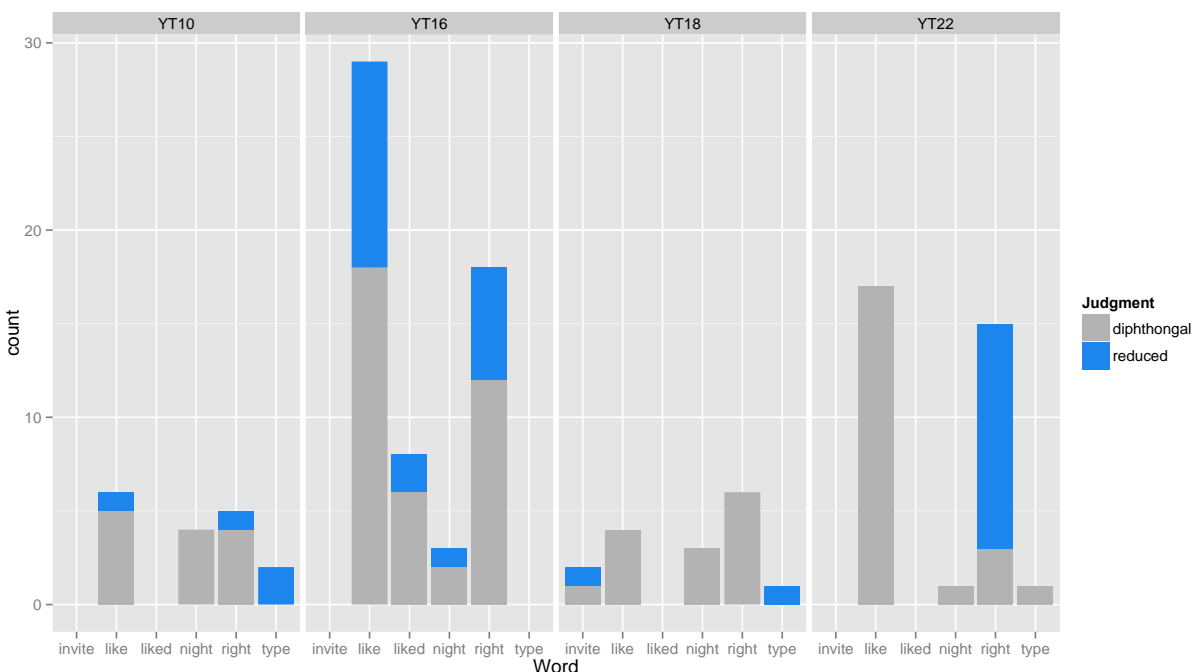


Figure 8.3. Pre-voiceless /aɪ/ reduction, by word and speaker

8.4.2 Results - interaction analysis

Speaker YT10

Figure 8.4 shows the number of reduced and diphthongal prevoiced /aɪ/ tokens for Speaker YT10, an African American, over the course of his interview. The x-axis divides individual minutes in the interview, and the y-axis provides a token count for each interview minute. Speaker YT10 reduces 57/137 prevoiced /aɪ/ tokens (42%). Although there are some portions of the interview where reduction appears to be particularly high (minutes 5-9, minutes 19-20), overall he appears to reduce /aɪ/ fairly consistently throughout the interview.

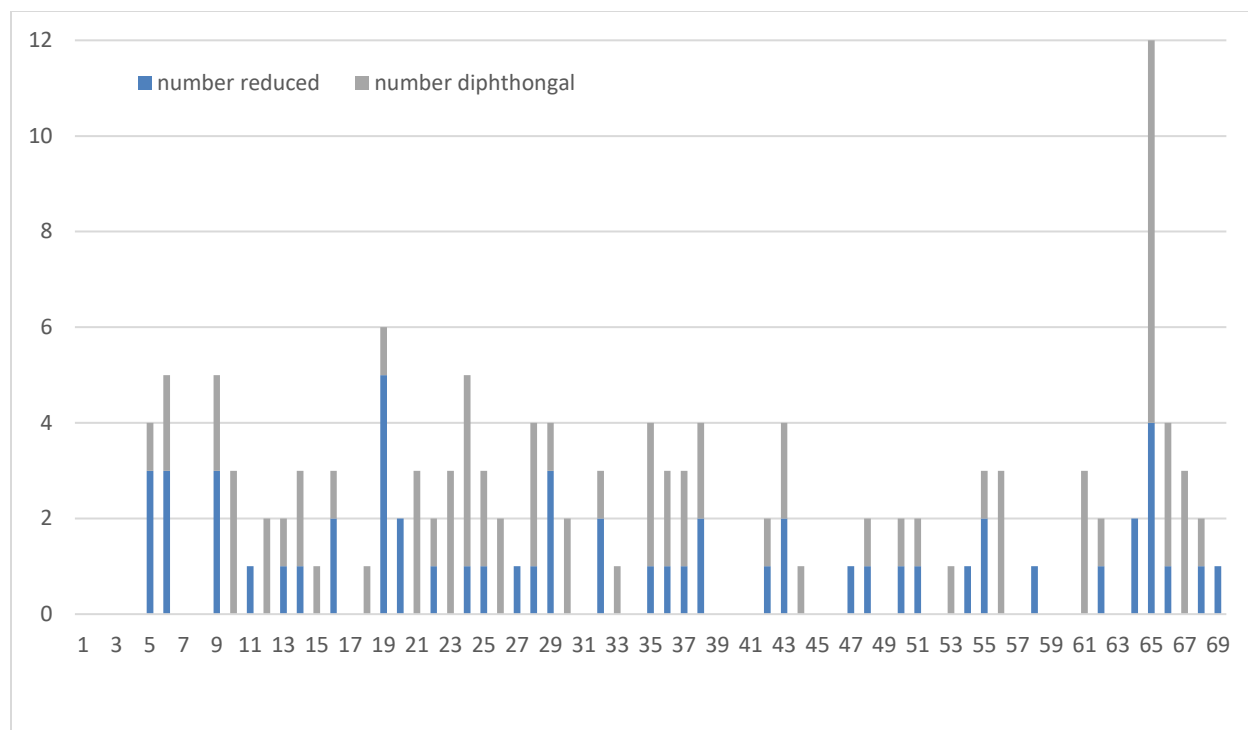


Figure 8.4. YT10 /aɪ/ reduction over time, for prevoiced tokens

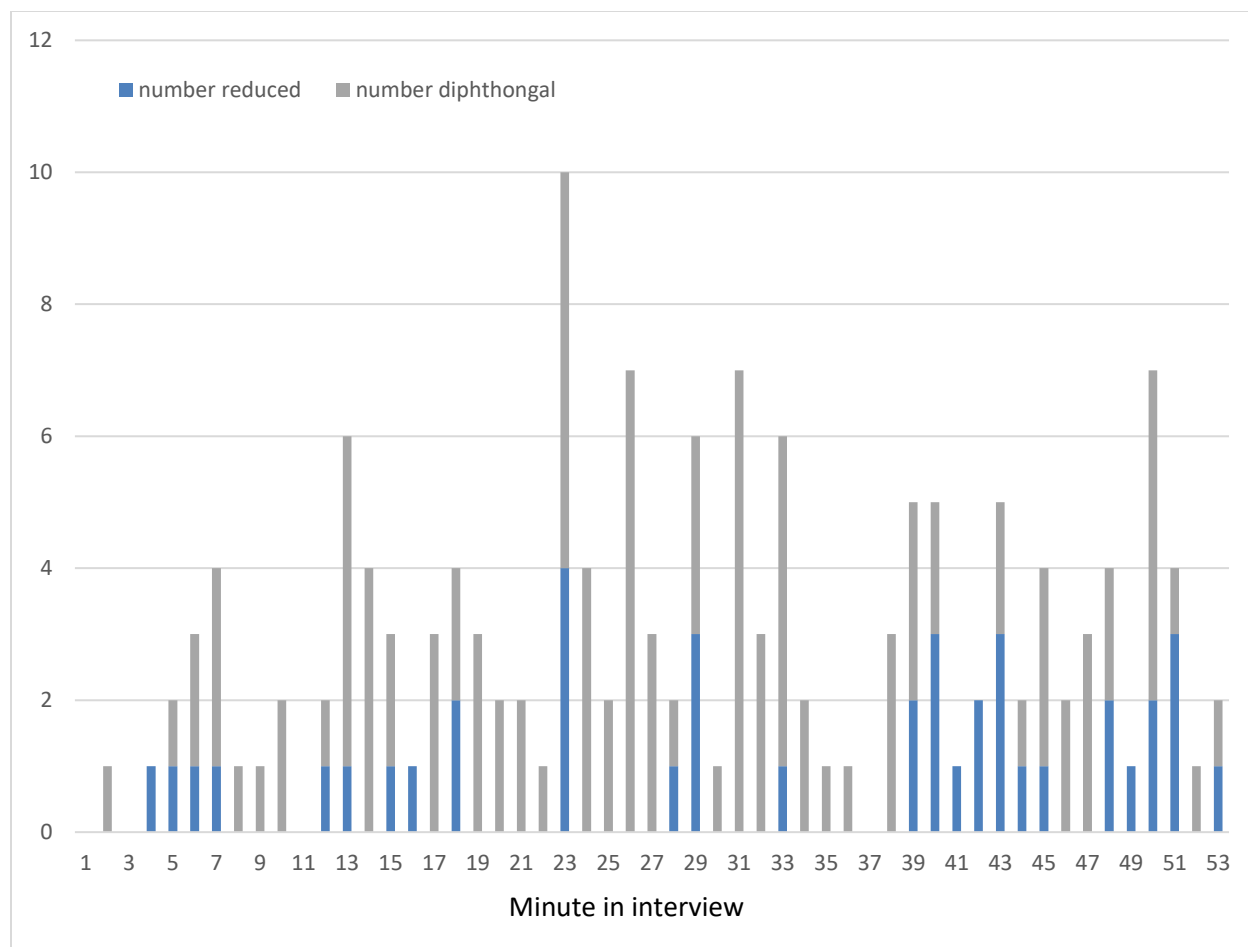


Figure 8.5. YT22 /aɪ/ reduction over time, for prevoiced tokens

Speaker YT22

Figure 8.5 shows prevoiced /aɪ/ production over time for Speaker YT22, an African American. YT22 reduced 44/153 /aɪ/ tokens over the course of his interview (27%). There appears to be more clustering of reduced /aɪ/ within his interview; he reduces prevoiced /aɪ/ at relatively high levels when discussing social groups in YT as kids and YT as family, but he reduces prevoiced /aɪ/ at relatively low levels when discussing role models in YT or who he went to for advice in YT.

4-6: [Describing a picture] *and we all had nicknames for each other at that time - you see our naturals? @ ... this group was more or less like a - a very tight-knitted group, you know ... but he's the other one that was in the group, and I don't think he was with us at the time we took this here, we took this picture ... what we do is we all have a picture like*

this here - and, boy, what is this, nineteen, must be sixty-something ... when we would hang out together - really, nothing, we played a lot of basketball, football, and uh [name] and [name] and myself, we used to do a lot of fishing, [name], as a matter of fact, he used to be the type of person that, we'd see him some years and some years we wouldn't see him, we couldn't figure out why, but as a little kid he'd get hisself into a little trouble (YT22, 00:03:38-00:05:13)

24-27: these other men ... were speaking to our lives, you can be whatever you make up your mind to be, you know, let us help you - and then they would show us things, you know, to inspire us, to vision, to get a vision of something bigger, than Yesler Terrace ... you know, they would take us outside of the Terrace, to show us - what a - what their home was like, and they would sit down and feed us and just talk with - and let us really be ourselves - and it's like they just took us up under their wings and just say hey c'mon - so they were showing us things outside of this project, because a lot of people are so, in captive in that project, they never really get out of it, then when they do get out, their mind is not out of it, so they're never really free, they still have the mindset that I'm still in captive ... that mindset is still there, and so you don't have a vision to expand or to, to grab for anything greater, and you stay, that, that mindset is just really there - and so what they were showing us, at least I can say for myself, is like, there's a world so big and so massive, the sky is the limit, so to speak - what you focus on doing in your life, nothing should be able to retain you or stop you from achieving what you want to be - you limit yourself because you refuse to educate yourself, or strive for something better in life ... and so they were kinda like instilling those things, good morals inside of us ... because we had a dream just win a basketball game - win a football game, and be content - run track, you know, but never, see ourselves being in actually, um, the US Open, playing tennis, or even being um, in the Super Bowl, or being on, the finals on the NBA, you know what I'm saying - and they were trying to show us these things along our life (YT22, 00:23:01-00:26:38)

40-43: we used to go down there and get pork fried rice for fifty-two cent @ and a spoon @ fifty-two cent and a, and a spoon... used to walk around Chinatown all the time, and

getting sour balls and ginger, and that was like, you know, hey it's just right down the street, really just, go down by the old bum hotel there and just go right down there to Jackson street and we're in Chinatown, you know - the hillside, you know, just went up the hillside, you know, get boxes, we'd go down to Chinatown and get big old boxes, like they put, refrigerators and things like that, slide down the hill (YT22, 00:41:30-00:42:23)

Interestingly, YT22 uses fully diphthongal prevoiced /aɪ/ in a few noticeable cases where he uses AAL-related phonological and syntactic variants. The first quote below demonstrates that fully diphthongal *outside* occurs in a clause preceded by highly salient AAE possessive *they* in the NP construction *they wings*, with th-stopping in *they*, and followed by coronal stop deletion in *project*. In the second example, reduced *right* appears alongside diphthongal *guys* and *these* produced with an initial alveolar stop:

and it's like they just took us up under [dei] wings and just say hey c'mon - so they were showing us things outside of this [pradzɛk] (YT22, 00:24:48-00:24:56)

right now, um within twenty-four hours I can touch [diz] guys, whether it be by phone or whatever (YT22, 00:35:20-00:35:26)

There are some cases where YT22 clearly changes register, including the below excerpt, where YT22 uses the reduced form in a quotation, alongside the zero auxiliary construction *why you doing that*.

you know, you bump into them every now and then, <Q hey Slim, remember when we took that course? - yeah, what are you doing now? - drivin' a bus - why Ø you doing that? Q>, you know (YT22, 00:49:57-00:50:03)

Speaker YT16

YT16 is the only speaker who shows highly variable reduction of pre-voiceless /aɪ/ over the course of his interview, with 20 of 82 prevoiceless /aɪ/ tokens reduced (22%). Figure 8.6 shows counts of diphthongal and reduced prevoiceless /aɪ/ over time for YT16.

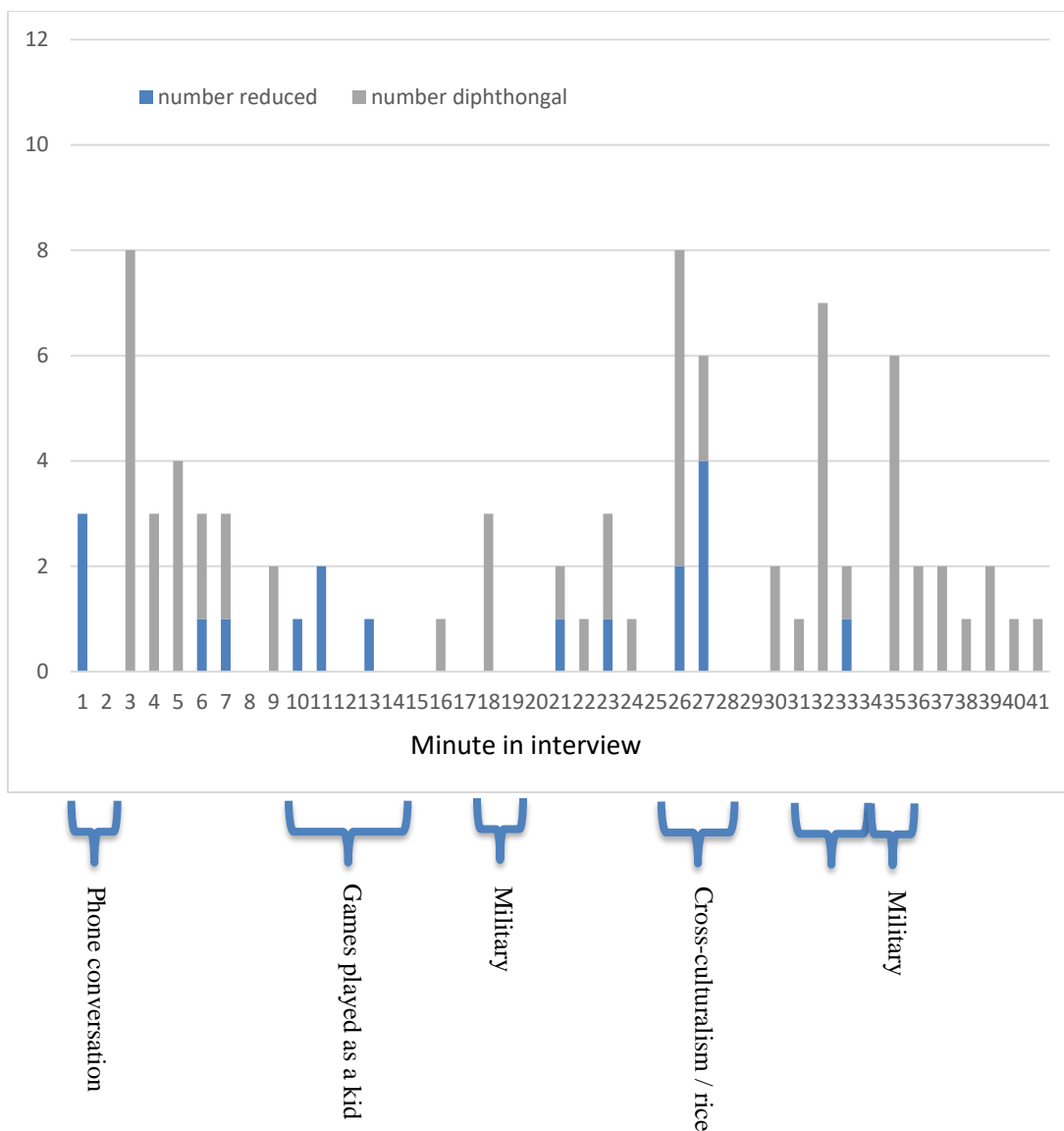


Figure 8.6. Y16 /aɪ/ reduction over time, for prevoicless tokens

Looking at his /aɪ/ production over time, there are some conversational topics where prevoicless /aɪ/ is not reduced at all. In particular, there are two points in the interview in which he talks about his time in the military (bracketed in Figure 8.6). Over the course of these two topics, Speaker Y16 reduces 0/11 instances of /aɪ/. At the beginning of the interview, Y16 was recorded speaking on the phone to a friend, where he reduced three consecutive instances of *right* before beginning the interview proper and switching to diphthongal prevoicless /aɪ/:

all [ra:t], I'm [ra:t] in the middle of something [ra:t] now (Y16, 00:00:39-00:00:43)

There are two stretches of speech where YT16 discusses YT as a multicultural community, and these two stretches show different patterns of prevoicless /aɪ/ reduction. In the first pertinent stretch of speech, he discusses how people with different ethnic backgrounds prepared rice dishes differently and shared the food, and 6/14 tokens (43%) are reduced. In the second stretch, he reflects on how YT was a true “melting pot”. While both of these stretches of speech reflect on the multicultural nature of YT, and contain similar lexical items with prevoicless /aɪ/, the first is more of a narrative about how things were “back in the day,” focusing on how folks ate together and took care of each other, while the second is a larger-picture analysis of the cultural makeup of the community.

we, [name] and I, we always laugh about the story about - um, I like to eat at Missus [name] house - because when they had rice, they had brown gravy on the rice - which is - traditional in Black families, right? - and he liked coming to my house, cause my mother made white people's gravy which was, you know the drippings from the grease, and some flour - and it, and it was - what do they call it, country gravy I guess is what they called it, right? and so he liked that, cause it was different, and I liked the brown gravy at his house cause it was different, you know - and, and then, you know, we had a few Asian friends, we would go to their house - they had teriyaki sauce on the rice, so that was, something else too, you know, and, my Japanese friend liked to come to my house, because he liked country gravy ... [JH: [name] was his mother cause [name] was my age] right, right, okay, yeah (YT16, 00:42:48-00:44:50)

now that I look back on my experience and my time that I lived in Yesler Terrace you know, you know we were always taught in school that America was this, big melting pot, right? but in reality it wasn't - everybody was kinda separate - you know the white people lived in their area, black people lived in their area, Asian people lived in their area, and da-da-da-da-da - but what made the Terrace different was, you didn't have that choice ... so to me, Yesler Terrace was truly a melting pot, you know, whether you liked it or not - you know, and I think it forced people, to get to know other people, and other cultural-cultures - other ways of life, I mean, and - um - even though supposedly that we were all low-income, it seemed like - there were people who were low-income - and there were

other families that were like - dirt poor, but there were other families that seemed like - they had more than the rest of us too, cause, some people had - better clothes than other people, some people's family had better cars, or some of us didn't have a car in our family at all, you know so (YT16, 00:51:58-00:53:31)

Speaker YT16 reduces 24/160 prevoiced /aɪ/ tokens (15%), as shown in Figure 8.7. The times at which he reduces more frequently tend to be when he's discussing how things were in the past (e.g., his connection to his best friend's family, getting in trouble as a kid). As in the pre-voiceless context, discussion of his time in the military yields only fully diphthongal /aɪ/ (0/17 tokens reduced). Note also that YT16's discussion of the cross-cultural aspect of YT yields high reductions in the pre-voiceless context (6/14 tokens reduced), including reduction of *like* and *right* (4/5 tokens reduced in minutes 26-27), but no reduction (0/7 tokens) in the prevoiced context.

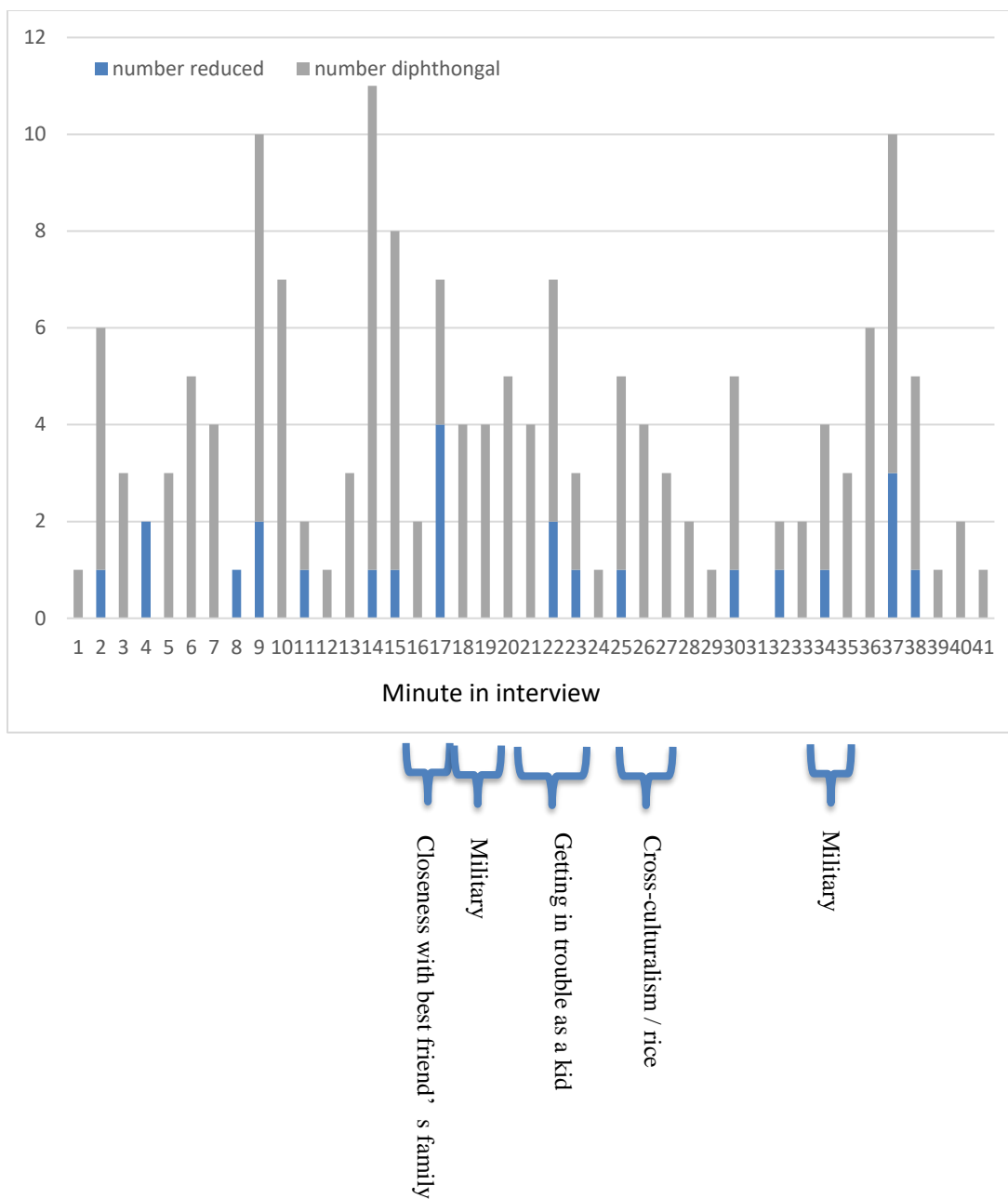


Figure 8.7. YT16 /aɪ/ reduction over time, for prevoiced tokens

In two stretches of speech where speaker YT16 discusses language and identity explicitly, we see dramatically different usage of /aɪ/ variants. The first is one of the stretches of speech where he talks about his time in the military, and nearly all /aɪ/ tokens are fully diphthongal:

so, um, when I was in the military, um - you know, even, even though the military was integrated, within the military - it was segregated, I mean most of the blacks stayed with most of the blacks, most of the whites stayed with most of the whites, and I was kinda always like, in the middle, you know - I wanted to hang with the brothers but, they didn't know me and they viewed me as a white guy who was, you know, like the rest of the white guys but - as I got to talk to people X and you know we interacted - you know, a few um other brothers said to me, well you're not like most of the white guys around here, you know, you dress differently than they do, you talk differently than they do, you act differently, you know, you can dance <@ you know and @>, and uh - so you know, they got t- they started asking questions, and that, I told em like you know, I'm from Seattle, I was born and raised in the projects and that's probably why you know they perceive me as being different or the way that I was, I didn't consider myself different but - um so, they said well we live in the projects, come, you know come spend some time with us on the weekend, so uh, I went to New York City, and I I believe it was either Brooklyn or the Bronx and I don't know which but - um - and as I got to where they lived I think they could - um, see in my face that I was a little in shock and so they were like, what's wrong with you, you you said you're, living in the projects - and I I took the time to explain to them, I said but, it's nothing like this, you know I said, where I come from, yes, it's the projects but, you know, we have individual yards with grass and trees and, um - you guys live on top of each other, we live next door to each other, you know, I said uh, I look around here and, I see all these broken windows and, and the elevators don't work and, you know where I'm from if there's a broken window it gets fixed in a day or two, you know, somebody's stove don't work, they come and fix it right away - I, you know it- it's it was just, it was a whole different world to me, you know so (YT16, 00:57:23-00:59:43)

In contrast, for the passage below, the overall level of /aɪ/ reduction is not high, but there are some particularly unusual and salient reductions. The low-frequency lexical items *dialects* and *jive* are reduced (highlighted in blue below), while relatively high-frequency lexical items such as *white*, *guys*, and *time* are consistently diphthongal (highlighted in gray):

YT16: *I was asking about what the language thing was about, that, your part of your study and you were explaining how the University of Washington was - interested in different - dialects or different languages ... most people when they hear me speak -- you know, white people look at me and, cause I feel this a lot of times, and they're like, where's this guy from and, you know he sounds like a black guy, and then - black people look at me and hear me and listen to me and they think, they wonder if I'm from the South ... what they say a lot of time in response is, um you must've lived around black people or grown up around black people or you must be from the hood or something like that, so then I take the time to explain to people, that I grew up in Yesler Terrace and, you know, I went to Garfield High School ... I'm not trying to be hip or trying to be cool or whatever, this is the way I talk, this is the way I sound, I mean, you know I can - I can jive or whatever you wanna say too, you know when you're in that social aspect of it but, when I'm talking I'm just talking, this is the way I sound and this is who I am, so, you know - I don't know how to explain it any other way than to say that (YT16, 01:00:06-01:01:53)*

This quote is illustrative of a few important points regarding language. Language does not occur in a vacuum, but neither is it always explicated precisely. It's clear from YT16's discussion of the topic that he's not intentionally trying to sound Black or Southern. He's acknowledging a very local context for the speech he produces; it's similar in some way to the speech of Black people, and similar in some way to the speech of Southern people, but he sees it largely as a product of where he's from, and it's not so much reflective of a Black or Southern identity as his authenticity as a YT member. Outside of the local context, he feels the identifiers in his speech are often misconstrued; in the broader culture, some of the forms he uses are seen as markers of Blackness or Southern-ness. The narrative detailing his experience with the brothers in the military is also about his identity as a member of YT, and as a kid coming from the projects. However, within the broader social context of that conversation, he's distancing himself from the brothers. Comparing these two passages gives us the strongest indication so far that YT16 changes the way he positions himself as a member of YT over the course of the interview, and this change in footing corresponds with differences in his production of /aɪ/.

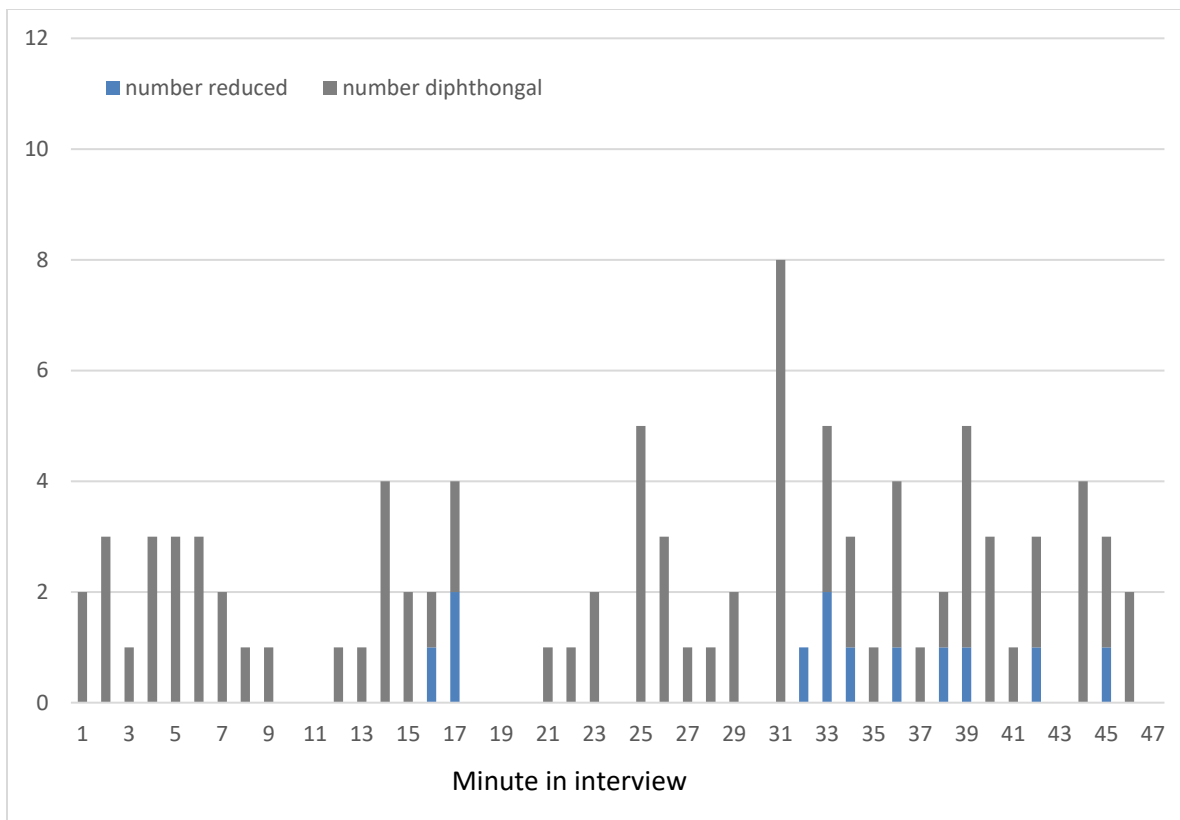
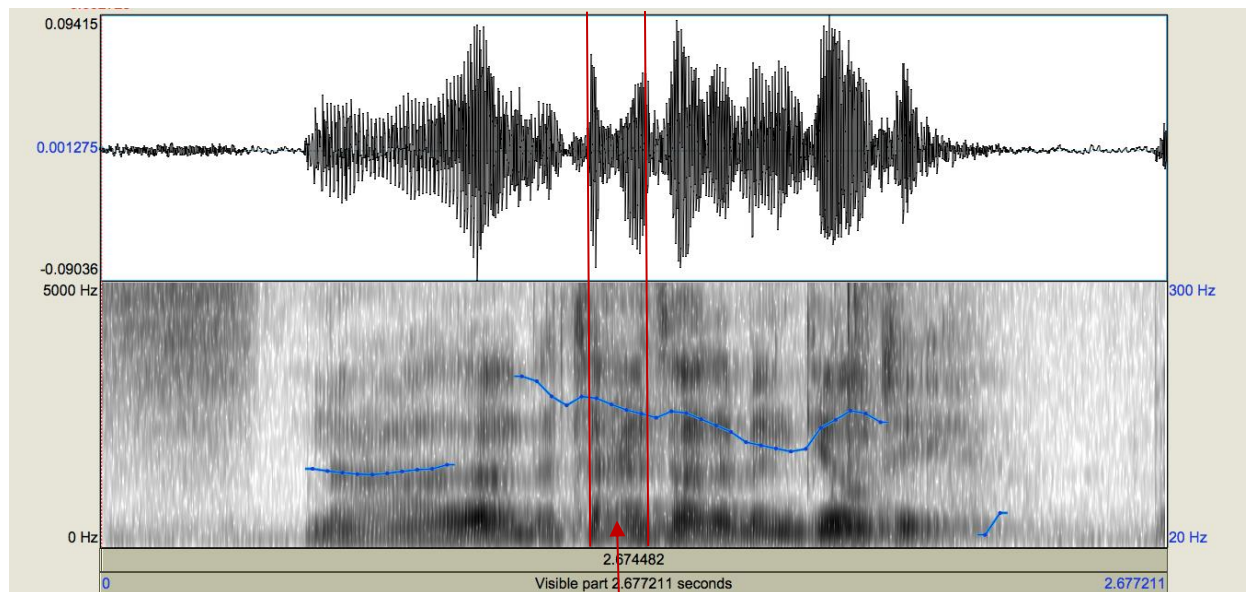


Figure 8.8. YT18 /aɪ/ reduction over time, for prevoiced tokens

Speaker YT18

Figure 8.8 shows prevoiced /aɪ/ for Speaker YT18, a White speaker, over time. YT18 shows clear clustering patterns in the prevoiced context, with 3/6 /aɪ/ tokens reduced in minutes 16-17, and increased reduction after minute 32. Some instances of /aɪ/ reduction appear to be related to the content. The reduction in minutes 16-17 corresponds with discussion of close relationships during childhood with homeless people in nearby Skid Row. In some cases, reduced /aɪ/ appears in instances of self-deprecating talk where YT18 describes himself as a kid who thought he knew everything and who got in trouble a lot. In the excerpt below (and in Figure 8.9), the vowel in ‘times’ is reduced, and co-occurs with a marked intonational pattern:

one day I got called in at noon into the office ... and the one time I was innocent - now other [ta:mz] I'da been guilty, but this time I was innocent (YT18, 00:34:58-00:35:25)



/ɑ:/

Figure 8.9. Spectrogram of Speaker YT18, “Now other times I’d a been guilty”

This is a case of narrow focus on ‘other times’, marked with an L+H* pitch accent. Holliday (2016) discusses the marked status of combined L+H* contour and narrow focus: biracial speakers who identify more as black employ the L+H* pitch accent in narrow focus marking more often.

8.5 DISCUSSION

This chapter described an interaction analysis that examined variations in four speakers’ /ɑɪ/ production across time. For only 1 of the four speakers analyzed, /ɑɪ/ reduction appears to be at a relatively consistent level throughout the interview. In the words of Sharma and Rampton (2014), the linguistic resources on which Speaker YT10 draws are, at least within this interview context, more fused and invariant. For the other speakers with intermediate levels of overall /ɑɪ/ reduction, a combination of discourse factors and lexical conditioning appears to mediate the production of /ɑɪ/. Their use of linguistic resources within the context of the interview is more flexible, granular, and differentiated.

There is very little evidence of code-switching, in the sense of distinct alternation between two language varieties, in this small corpus; /aɪ/ appears to act somewhat independently of other variables associated with AAL, although reduced /aɪ/ was found to appear alongside other AAL variants at times. In some cases, /aɪ/ reduction appears to operate independently of other variants associated with AAL, such as throughout much of YT16's interview, where reduced /aɪ/ is generally not used alongside other AAL phonological forms and AAL syntactic forms. YT22 uses some nonstandard phonological and syntactic variants alongside fully diphthongal /aɪ/. YT18's use of reduced /aɪ/ in conjunction with an L+H* pitch accent is a relatively robust use of variants associated with AAL. While it's difficult to speculate on the factors that encourage co-occurrence of AAL variants in places, it appears in some other cases that the use of /aɪ/ alone is sufficient to mark intention within the conversational context. From these observations it appears that a single speaker's shifts in /aɪ/ reduction are not necessarily examples of code-switching, and that the linguistic variable is available for more flexible and unbounded styling.

Results, although not quantified, suggest topic- and stance-conditioned reduction of pre-voiced and pre-voiceless /aɪ/ for 3 out of 4 speakers. Through a few examples, I've argued that stance-based style shifting appears to be used to signal a local, ethnographically specific position – namely, to denote how things were “back in the day” in YT. In particular, I've discussed instances where reduced /aɪ/ is used in stretches of speech where speakers were talking about the working-class values one could find in the community, such as having what they needed, being taken care of despite being poor, and eating together. These stance-based shifts were observed in both African American and European American speakers. We've seen that reduction of prevoiced and prevoiceless /aɪ/ operate somewhat independently of each other, for speaker YT16 in particular. Speaker YT16 shows /aɪ/ usage that's not fully constrained by locally dominant implicational rules regarding phonetic environment. There is compelling evidence that his use of /aɪ/ is *performative*. Even though there are large stretches of the interview where YT is the topic of discussion, his characterization of his place within YT changes, and /aɪ/ reduction rates change as his stance towards YT changes. For this speaker, discussion of his memories of growing up in a multicultural YT yields high levels of reduced prevoiceless /aɪ/, but no reduced prevoiced /aɪ/. In this case, reduction appears to be targeted specifically for instances of *like* and *right*. His pattern of /aɪ/ usage in places, marked by reduced prevoiceless /aɪ/ and fully

diphthongal prevoiced /aɪ/, is markedly different from common African American, Northern White, and Southern White patterns. I argue that /aɪ/ appears to be signaling some kind of stance towards YT, as this pattern appeared when YT16 was discussing his experience in YT “back in the day”. This is one outstanding example from the dataset that /aɪ/ reduction does not need to be categorical, high-frequency, or even consistent with common macro-social patterns/indices in order to index a stance. Here we make no hard claims about /aɪ/ use and identity. However, Coupland (2001) describes stylistic variation as dynamic presentation of a persona, and it is instructive to note that Speaker YT16’s /aɪ/ usage varies most in statements about “I”. For him, part of in-group identification is showing his authenticity as a YT member, and showing his familiarity with various styles within the community. Additionally, we have, in speaker YT16’s metalinguistic commentary, some indication that he sees the resemblance of his speech to that of African American or Southern Language as more of a historical circumstance than an intentional decision to portray affiliation with African American culture, and we observed differences in the way he talks about himself in a local (YT) context versus a broader (military) context. Similarly, in speaker YT18, /aɪ/ reduction is associated with a temporary and interactionally specific stance and participant role, specifically, blithe dismissal of the young rascal he once was.

The next chapter discusses the dissertation’s findings over all three analyses, draws broader conclusions, and identifies directions for future study.

Chapter 9. DISCUSSION

9.1 OVERVIEW

This dissertation has been concerned with two main goals. The first was dialectological: to describe the vowel production of a set of speakers from the Pacific Northwest, along a range of variables. By looking at a set of speakers from a racially integrated community, the dialectological goal was to better understand how variables understood as either related to AAL or to the Pacific Northwest are produced by speakers in this community. The second was to gain a better understanding of how some variables associated with AAL are utilized as resources for meaning-making within this community.

The dissertation began with literature reviews of intra-speaker variation and AAL in sociolinguistics. It proceeded with the idea that intra-speaker variation needs to be examined within the context of the persona a speaker is intending to convey in an interaction or the narrative the speaker is constructing in that moment. It recognized that both Situational shifts, which can be studied by examining differences in speech production across different interlocutors, and Metaphorical shifts, which need to be analyzed inductively, can inform our understanding of intra-speaker variation. It problematized the concepts of ethnolect and community-as-demography in sociolinguistic research and argued that the social meaning of linguistic variables can be studied as something informed by but not isomorphic with ethnic identity. It argued that understanding an individual's style shifts may require an in-depth analysis of the geographical, historical, sociopolitical, and personal contexts in which an individual lives as well as an informed understanding of the individual's interactional needs and intentions. The dissertation then gave a brief history of Yesler Terrace and a description of the community of speakers in the study at hand. I argued that Seattle, and YT in particular, can be characterized not only in terms of its ethnic makeup, but also in terms of residents' ethnoracial attitudes, community values, and related social behaviors, which appear to be unique to other multi-ethnic urban communities in the United States. I argued that speakers from YT, particularly in the context of the interviews Jean Harris conducted, have opportunities to convey complex multivalent identities related to ethnicity, place, and social class. I argued that YT, particularly

within the context of the interviews, can be characterized as a community with salient working-class values of mutual help and understanding, and safety and freedom associated with childhood. The dissertation gave an overview of the linguistic variables under study, and characterized variables as either salient to the Pacific Northwest or to super-regional AAL.

This dissertation included three distinct but related analyses. The first was a descriptive analysis of vowel phonology among a sample of YT members, including both members who self-identify as African American and members who self-identify as European American. This analysis compared the vowel features of YT speakers with speakers from other PNW studies, and with vowel features found in speakers of AAL across the United States. The second analysis examined one YT member in particular, and accounts for both stylistic shifts according to features of her interlocutors and shifts based on topic, stance, and footing. The third analysis considered how one variable associated with AAL, /ai/ reduction, was utilized by YT speakers in interaction. For each of the three analyses, I review the results and outline the unique contribution the findings make for the field of sociolinguistics.

9.2 DIALECTOLOGICAL STUDY

9.2.1 *Overview of results*

The results from the study of the larger YT sample (§6) showed that:

- YT African Americans distinguish their /aɪ/ production in various ways from European Americans in the community (higher levels of overall /aɪ/ reduction, longer pre-voiceless change in F2 over the course of the vowel, and higher /aɪ/ onsets for speakers who were both African American and familiar to the interviewer);
- Speakers consistently fronted the TOOT and BOOK classes, and consistently did not front the BOAT class; most speakers did not front the BOOT class, though a small number did show some fronting;
- YT African Americans distinguish their COT-CAUGHT production somewhat from European Americans in the community, with more distinct COT and CAUGHT classes and more fronted COT class;

- While there was limited data for the BOWL and BULL classes, the available data suggests that African American YT speakers may distinguish BOWL and BULL along F1, while European American YT speakers have spectrally merged BOWL and BULL;
- The entire sample tended to show strong spectral overlap between the PIN and PEN classes, though the two classes are more differentiated at vowel offset. YT African Americans had a lower PIN vowel than YT European Americans; and
- The sample consistently showed strong overlap between /eg/ and /εg/, and speakers in the sample consistently raised or fronted /æg/, though it remained distinct from the first two vowel classes. No patterns indicating ethnicity differences in the production of the /æ/, /e/, and /ε/ classes were observed. In contrast with some PNWE speakers in Riebold (2012), YT speakers do distinguish non-pre-velar /æ, e, ε/.

These results show that African American YT members distinguish themselves from their European American peers by drawing on both super-regional features associated with AAL (/aɪ/, PIN-PEN merger) and features that are understood more as broad regional features (COT-CAUGHT merger, BULL-BOWL merger). For linguistic features that we know, from previous research, show patterns unique to the Pacific Northwest (high back vowels, BEG/BAG/BAKE), this study's data show similar patterning within YT (fronting of BOOK, conditioned fronting of BOOT, merged BEG/BAKE, distinct BAG). However, I didn't find, at least within this small community of YT members, evidence of differences between African American and European American speakers for these features.

The study also found a number of linguistic variables that showed wide variation across African American speakers in the sample. Some but not all speakers showed some fronting of the BOOT class. Some but not all speakers had lexically fronted or raised *got*. Most but not all YT African American speakers showed significant differences between the COT and CAUGHT classes. Overall levels of /aɪ/ gliding varied among the YT African American sample.

9.2.2 *Unique contributions to sociolinguistics*

This study made unique contributions to our understanding of each variable studied. I will describe how the analysis contributed to our understanding of regional vowel variation for each variable.

Although /aɪ/ production in Washington State has been examined by a few studies (Sadlier-Brown, 2012; Wassink 2015; Swan 2016), the project that this dissertation is a part of is the first to look specifically at /aɪ/ reduction in the Pacific Northwest, and the first comparative study of /aɪ/ production among African American and European American speakers in the region. This dissertation expands on the findings from Scanlon and Wassink (2010a), which relied on auditory analysis of a small number of YT speakers, by describing phonetic differences in /aɪ/ production between YT African American and YT European American speakers, for both reduced and non-reduced /aɪ/ vowels. The results from §6 confirmed the hypothesis that YT African Americans have longer non-reduced /aɪ/ glides than YT Caucasians in the pre-voiceless environment, and showed that this difference in overall gliding was reflected phonetically as a difference along F2 for these vowels. This finding among Pacific Northwest speakers is comparable to the findings of Thomas (2001) in other parts of the United States. The interaction effect at the vowel onset, whereby speakers who were both African American and familiar to the interviewer had higher /aɪ/ onsets, is a new finding but is difficult to contextualize in light of previous research; for the present study, it is clear evidence that interlocutor features other than ethnicity have an impact on /aɪ/ production, and suggests that, locally to YT at least, /aɪ/ has a broader social meaning beyond its associations with ethnicity.

Analysis of high back vowels confirmed the results of Wassink (2017) with a larger sample of African American speakers: the BOOT and BOOK classes are consistently fronted, and the BOAT class is consistently not fronted. The patterning of these variables bolsters the argument from Wassink (2017) that Pacific Northwest speakers show a qualitatively different pattern than the California Vowel Shift (namely, no fronting of the BOAT class in the Pacific Northwest). Additionally, by looking separately at /u/ after coronal consonants and /u/ in other contexts, this study showed, for both African American and European American speakers, that /u/-fronting is

primarily found after coronal consonants, although a small number of speakers also fronted /u/ that appeared in non-post-coronal contexts.

The COT-CAUGHT results confirm the findings of Thomas (2007) and Wassink (2015) with a sample of speakers from Seattle – that European American speakers show strong spectral overlap between the COT and CAUGHT classes, and that African American speakers have more distinct COT and CAUGHT classes than comparable European American speakers. While Wassink (2017) found, in a sample of speakers from Washington State, that African American speakers distinguished COT and CAUGHT by height rather than by fronting, in the current sample a higher proportion of speakers showed a distinction between the two vowels along F2 than along F1, and there is some evidence that relative to European American speakers from YT, African American speakers from YT have slightly more fronted COT vowels. Together, the results from the current study and from Wassink (2017) show that there is variability among African American residents in Washington State in how the COT and CAUGHT classes are distinguished. Additionally, this study added to our understanding of the COT class in the Pacific Northwest by looking at the occurrence of lexical fronting and raising of *got*. Results show that roughly half of the study subjects did display lexical fronting or raising, and that fronting or raising was roughly equally prevalent among African American and European American YT members.

While the BULL-BOWL results from this study are limited, the available data adds to what sociolinguists know about this merger in the Pacific Northwest, and also allows us to understand better how BULL-BOWL merger appears in the Pacific Northwest versus other parts of the country. The current study confirms the findings of Squizzero (unpublished) and Stanley (2017) with a separate sample – that BULL-BOWL merger is present to some extent among European American speakers in the Pacific Northwest. The current study, in looking at BULL-BOWL merger among African American speakers, found a different pattern in the Pacific Northwest than is attested in other parts of the United States; while Labov et al. (2006) found that African American speakers throughout the United States were more likely than European Americans to merge BOWL and BULL, in the YT sample European American speakers showed stronger evidence of merged BOWL-BULL than African Americans.

Regarding PIN-PEN merger, this study added to the findings of Scanlon and Wassink (2010b) in a few ways. First, the current study is the first to look at differences in PIN-PEN production in the Pacific Northwest by speaker ethnicity. It found that strong overlap between the PIN and PEN classes is prevalent among YT European Americans as well as among YT African Americans, and that YT European Americans have a higher PIN vowel than YT African Americans. Second, while the exploratory results from Scanlon and Wassink (2010b) suggest that YT speakers may differentiate the two vowel classes by vowel duration and degree of gliding, the current study, using a larger sample and a more conservative analysis, did not find differences between the two vowel classes in degree of gliding or duration.

The BAG/BEG/BAKE analysis added to existing literature on the distribution of these vowel classes in Seattle-area speakers, primarily by examining these vowel classes in a different sample of speakers. Within YT, there was no evidence of differences in BAG/BEG/BAKE production by ethnicity or by gender. The findings of the current study align closely with the results of Riebold (2014), which found consistently strong overlap between BAKE and BEG, and raised/fronted but distinct BAG. In contrast with Riebold (2014), which found that for some PNWE speakers non-pre-velar /æ, e, ε/ were mergers-in-progress, the current study found that YT speakers maintained distinct non-pre-velar vowels.

9.3 CASE STUDY

9.3.1 *Overview of results*

Chapter 7 presented a case study of Jean Harris' intra-speaker variation for three linguistic variables that showed ethnicity-based variation in the larger YT sample (/aɪ/, PIN-PEN, and COT-CAUGHT). As discussed in §7.4, the results from this case study show that Jean's production of some variables simply mirrors the ethnicity-based differences found in the larger YT community. Jean changes the position of the merged PIN-PEN classes depending on the ethnicity of her interlocutor, and she produces more distinct COT and CAUGHT classes with African American interlocutors than with European American interlocutors. Jean's /aɪ/ production, however, shows variability along several dimensions, including interlocutor

ethnicity, interlocutor familiarity, and interlocutor /ɑɪ/ reduction rate. Looking closely at Jean's production of /ɑɪ/ in the prevoiceless context, I argued that Jean is using a feature of AAL not only to signal a response to the ethnicity of her interlocutor, but also to signal a response to whether her interlocutor is familiar to her or not. Jean's Situational shifts, then, show one example of how features associated with AAL can be utilized as a resource for meaning-making, outside of merely signaling some aspect of ethnicity.

9.3.2 *Unique contributions to sociolinguistics*

Methodologically, the case study takes a relatively unique approach, quantitatively studying stylistic shifts by an interviewer (but cf. Trudgill 1986). This study, like Grieser's (2014) study of English in Washington, D.C. and Becker's (2014) analysis of New York City English, shows that speakers can use features associated with AAL to do stylistic work in the interest of conveying a complex multivalent identity, of which ethnic identity is only a part. For Jean, within the very local context of the YT interviews, her /ɑɪ/ use is related somehow to her familiarity with interlocutors. The shifts in her use of /ɑɪ/ signal that she is situating herself according to the interview task at hand, and adjusting her approach as interviewer by shifting linguistically, in a subtle way, with familiar versus non-familiar interlocutors from YT. These shifts suggest that the social meaning of /ɑɪ/ can serve a broader function than merely indexing ethnic identity, at least within the YT community. However, this analysis does not give us a strong idea of what values or attitudes are associated with /ɑɪ/ variants, how /ɑɪ/ is related to the values related to social class that appear to be so important for the YT community, or how /ɑɪ/ is employed in moment-to-moment interactions. The inductive analysis of /ɑɪ/ in Chapter 8 takes up these important questions.

9.4 INTERACTION ANALYSIS

9.4.1 *Overview of results*

In Chapter 3, I identified some broader questions regarding features associated with AAL. Specifically, I identified a need to understand better how these features are employed within racially integrated communities, and in communities that have a complex relationship with

socioeconomic class; identified an inherent conflict between ‘codes and consequences’ and Speaker Design frameworks; and questioned whether and to what extent the use of features associated with AAL can be identified as ‘code-switching’ or shifts that are more flexible and unbounded.

The interaction analysis (§8) looked at /aɪ/ reduction in the speech of four YT members, to better understand when reduced /aɪ/ occurs and what its use signals for YT members. This analysis addressed two larger questions about identity in interaction, drawing from Bucholtz and Hall (2005):

- *Coherence of AAL*: Is there evidence of Metaphorical use of reduced /aɪ/, separate from the use of other AAL markers?
- *Indexicality of /aɪ/*: Does the use of /aɪ/ signal some aspect of African American identity, or is its use broader?

Observed as a whole, there don’t seem to be any consistent patterns across speakers in their use of reduced /aɪ/ vis-à-vis other variants associated with AAL, and the speakers appear to utilize distinct strategies for /aɪ/ reduction. In some cases, /aɪ/ reduction appears to operate independently of other variants associated with AAL, and the linguistic variable is available for more flexible and unbounded styling.

While we see higher levels of overall /aɪ/ reduction for the African American speakers in this sample, throughout the interviews there are several pieces of evidence that indicate reduced /aɪ/ is used by these 4 YT members as something other than an ethnic marker. Speaker YT16 in particular shows /aɪ/ usage that’s not fully constrained by locally dominant implicational rules regarding phonetic environment. I argue that his use of /aɪ/ is *performative*, and that /aɪ/ reduction does not need to be categorical, high-frequency, or even consistent with common macro-social patterns in order to index a stance. I argue that, for some speakers from this analysis, Metaphorical style shifting appears to be used to signal a local, ethnographically specific position – namely, to signal speech about how things were “back in the day” in YT, particularly in regards to the working-class values found in the community.

Note that the discussion of /aɪ/ to this point skirts the discussion of ‘authentic speech’ as synonymous with vernacular speech; in fact, YT16’s performative /aɪ/ reduction appears to be at a point when his attention to speech is highest – during discussion of his dialect. Nor does this analysis attempt to correlate use of reduced /aɪ/ with an African American identity or to degree of social closeness to African Americans. I do not think the European American YT speakers’ use of reduced /aɪ/ is necessarily a moment of ‘crossing,’ in the sense that they’re utilizing outgroup language resources, or a direct Act of Identity with African American culture. Within the context of the YT interviews, I argue that such a move is meant to be understood, based on shared common knowledge of local linguistic norms, as indexing stances or footings, rather than to directly reflect an ethnic identity. In this way, such moves could be described as reflecting a second-order indexicality, “in which ethnicity plays a prominent but not determining role” (Eckert 2008a, p. 41; also see Silverstein 2003). For Speaker YT18, his use of reduced /aɪ/ in tandem with an L+H* contour signaling narrow focus could not be meant to signal blackness. And yet it stands as a very linguistically salient moment in his interview, where he steps momentarily into his role as an observer in the present, commenting about the roguish person he used to be.

9.4.2 *Unique contributions to sociolinguistics*

The interaction analysis adapts the methodological approach to intra-speaker variation from Sharma and Rampton (2014), focusing on an individual variable rather than an entire lect, and, for the first time in sociolinguistics to my knowledge, applies this method to intra-speaker variation related to AAL. Taken all together, the results from the interaction analysis show that /aɪ/ can be used productively for Metaphorical shifts, and that while /aɪ/ reduction is a feature associated with AAL, these shifts don’t need to relate directly to African American identity. I argue that /aɪ/ is available for YT members as a linguistic resource, and that reduced /aɪ/, within the context of the YT interviews, can be used to signal particular working-class attitudes and values associated with growing up in Yesler Terrace. This social meaning associated with /aɪ/ among YT members is qualitatively different from those that have been described in ‘codes and consequences’-type approaches (e.g., Myers-Scotton, 1998), where variables associated with AAL are seen alternately as symbols of ethnic solidarity and as a focus of ethnic discrimination. Just as the working-class nature of YT is seen mainly as a strength for people who grew up there,

I argue that reduced /aɪ/ is available for YT members as a symbol of working-class solidarity. These results are similar to those found for Grieser (2014), where African American residents of a neighborhood in Washington, D.C. used final consonant devoicing to “construct multiple ... identities of race, place, and class” (iii).

9.5 PULLING IT ALL TOGETHER

From the variationist dialect study, I found that African American speakers distinguish themselves from their European American peers by drawing on both super-regional features associated with AAL and features that are understood more as broad regional features. For the European American speakers, I found that YT members produced regional vowels consistently and varied in their use of features associated with AAL. From Jean’s case study, I found that her variable use of linguistic features tended to mirror ethnicity-based differences found in the larger community, and I identified that while one variable associated with AAL, /aɪ/, did index ethnic identity within the context of the YT interviews, it appeared to additionally signal some aspect of community membership (interlocutor familiarity). With the interaction analysis, I showed that /aɪ/ was available as a linguistic resource for both African American and European American YT members, and that its use by some speakers is agentive and creative (i.e., Metaphorical, as defined by Rickford, 2014). Looking across these three analyses, I’ve tried to paint a relatively comprehensive picture of intra-speaker variation in /aɪ/ production in YT. Like many other sociolinguistic studies of older African American speakers, this study shows non-categorical shifts in the use of reduced /aɪ/. In addition, in the interaction analysis (§8), we see that the use of reduced /aɪ/ is not merely probabilistic or rule-governed. Even in the absence of investigator-initiated Orchestrations (after Rickford 2014), Metaphorical shifts appear to be present. I’ve identified, using a number of different analytic methods, a number of indexical meanings for /aɪ/ variants. Within the context of the YT interviews, /aɪ/ has been used to signal speakers’ ethnic identities, accommodation to interlocutors’ ethnic identities, interlocutor familiarity, associations with place, associations with social class, topic shifts, and stances towards ethnic and non-ethnic topics. For /aɪ/, I’ve identified both Situational and Metaphorical stylistic shifts, using markedly different analyses for identifying each kind of shift. Altogether, we see a more complex picture of /aɪ/ reduction than could be described by purely frequentist analyses.

We also see that use of /aɪ/ across YT speakers has a complex relationship to the topic of YT and AAL. I've outlined some persuasive examples that, as a salient variable associated with AAL, /aɪ/ may be performed independently from other variables associated with AAL, and its use isn't necessarily tied to a lect-specific meaning. /aɪ/ itself doesn't seem to mark membership in YT through overall levels of reduction, and YT-related topics themselves don't necessarily exhibit high levels of /aɪ/ reduction. Nor is /aɪ/ associated with African American topics in the examples above. Instead, we see for some speakers that /aɪ/ reduction is more frequent in discussions of how things were 'back in the day' in YT. This finding suggests that use of reduced /aɪ/ within YT operates, to some extent, independently of its group-associational meaning as an AAL variant. The characterization of AAL as a sociolect is based on the notion that individuals are able to draw from a wide range of linguistic resources. Just as importantly, though, speakers are able to draw from a wide range of social meanings for a variable or set of variables. Just as Preston (2010) has enumerated the multiple and sometimes conflicting social meanings that can be associated with Southern speech, we can use studies of style-shifting to pinpoint the various social meanings of variants associated with AAL. As a diverse community with competing linguistic variants associated with various regions and speaker ethnicities, YT provides a unique opportunity to look at variables that, while associated in some communities with African American Language, aren't uniquely used by African Americans, or used exclusively to signal some aspect of African American identity. Rather than characterizing shifts in /aɪ/ as code-switching, the use of /aɪ/ by some speakers in YT could be more accurately described as *bricolage* (Eckert 2008a) or *heteroglossia* (Bahktin 1981; see §2.2.3). To more fully understand the interactionally-grounded social meaning of /aɪ/ reduction, we need to examine more African American and mixed heritage communities where we might expect this kind of bricolage.

By comparing the three analyses alongside each other, it's possible to note their respective strengths and weaknesses as analytic tools and their relative contributions to our understanding of the social meaning of linguistic variables under study. The variationist dialect study allowed for a comparably broad analysis of linguistic variables and made broad distinctions between the speech of comparable African American and European American speakers. With quantitative variationist approaches, though, our understanding of a variable is tied to its macrosocial

associational meaning. We need a lot of data, and oftentimes need to build increasingly complex statistical models, to make sense of quantitative variationist data. This approach does allow us to look at relatively small acoustic differences in speech using statistical techniques and relying on statistical concepts such as averages and standard deviations to identify prototypical patterning for sets of linguistic variables. This kind of approach is useful for looking at differences in speech production based on stable and pre-existing (i.e., macrosocial) social categories, and is less useful for examining how speakers portray more fluid and situational identities. The Audience Design and Speaker Design studies inform a somewhat different aspect of language use; with them we're able to observe a range of behaviors that characterize an individual's use of linguistic resources. The Audience Design analysis can also make use of relatively small acoustic differences in speech, but allows us to examine 'responsive' shifts (Bell 1984), and explain shifts in terms of observed differences between two otherwise closely matched interlocutors. However, Audience Design approaches are necessarily limited in their scope, because they are based on systematic manipulation of a speakers' interlocutors. The present study was limited to investigating how a speaker's use of linguistic variables were associated with the ethnicity and the familiarity of her interlocutors. The interactional Speaker Design approach allows us to question whether intra-speaker shifts are associated with a wide number of social components of speech, such as setting, stance, and topic. Crucially, this approach allows us to qualitatively observe and reflect on stylistic shifts that are infrequent and agentive. However, it can be difficult to say with certainty why a particular shift occurs, especially with variables that are multivalent. The interactional approach requires that we have a good understanding of the context in which utterances are produced and can convincingly attribute stylistic shifts to changes in stance or footing. Inductive interaction analyses are most useful for examining speech production in the performance of identities that are more dynamic and situated. With the three analyses together, we're able to see how stylistic shifts are informed by the macrosocial construct of ethnicity, and also where shifts signal salient stances that are derived from ethnoracial identity but are more immediate and situated, and in this case don't correspond cleanly with speaker or interlocutor ethnicity. As a whole, the analyses view features associated with AAL through a somewhat different lens than in studies where AAL is commonly described as a lect or a repertoire. The community's repertoire (i.e., the range of linguistic forms available to speakers within the community) is described by the variationist analysis, and comprises

features associated with both African Americans and European Americans more broadly (and most likely a number of other macrosocial categories). The Audience Design and Speaker Design analyses show that speakers differ to some extent in how they draw upon that repertoire. In other words, the variationist study shows what forms are available within the community, and the Audience Design and Speaker Design analyses show how speakers within the community make use of the available forms.

Throughout this dissertation I've noted the importance of studying the social meaning of linguistic variables associated with AAL in communities that are racially integrated (also see Grieser 2014). As an exploratory study, this dissertation isn't able to draw a clear connection between the ethnic makeup of YT and the distribution and uses of variables associated with AAL. However, I argue that the creative use of features associated with AAL by European American YT members, as shown in the interaction analysis, shows that /aɪ/ is available as a linguistic resource not just for African American YT members but for YT members across ethnic lines. The findings from this study suggest that the social meaning of /aɪ/ may be co-constructed across ethnic lines in diverse communities, and that within the context of communities that are truly integrated, other locally salient social meanings apart from ethnicity may be pertinent for linguistic meaning-making. This finding underscores the importance of a community-as-value approach to sociolinguistic study of AAL. More broadly, throughout this dissertation I've tried to advocate for and practice an approach in sociolinguistics that considers the communicative and interactional goals of speakers. I've argued that the speech of YT members in the interviews studied here needs to be understood as more than just the speech of African American Seattle residents and European American comparators. I hope to have shown that understanding how YT members themselves characterized the community and met the interactional tasks of relating shared stories, building solidarity, and taking ideological stances is essential for understanding the social meaning of linguistic variables within these interviews. In many ways I see Yesler Terrace and these interviews as a unique context for sociolinguistic study, but I suspect there are other places in the United States where we see similarly wide intra-speaker variation in features associated with AAL. Future sociolinguistic studies that combine qualitative study of multi-ethnic communities with quantitative approaches to linguistic variation may find more cases where the use of features associated with AAL is more flexible, granular, and unbounded.

9.6 LIMITATIONS AND FUTURE DIRECTIONS

This dissertation argues through a number of examples that variables associated with AAL are used to signal YT-associated values, rather than signaling an African American identity. However, as an observational study the connections between linguistic forms and social meanings are only correlational, and it is not clear how either YT members or other Pacific Northwest listeners perceive variables associated with AAL. Clearer evidence of the social meaning of linguistic variables associated with AAL would come in the form of a perception study, where listeners would be asked to judge the features of a speaker based on different productions of, for instance, /ɑɪ/.

This dissertation used available observational (interview) data and selected statistical methods that are consistent with much of the literature in sociolinguistics. In particular, parts of the dissertation employed stepwise single-level regression, which was at one point identified as the ‘gold standard’ in variationist sociolinguistics (Tagliamonte, 2006). However, more recent literature argues that single-level regression analyses may over-estimate external factors such as age and gender, particularly in situations where individuals within a group vary widely, because multiple observations from a single speaker are not independent. In these situations, a mixed-effects model may be more appropriate (Johnson, 2009). In this study, the number of European American subjects interviewed (n=5) was relatively low, which made it difficult to employ more advanced mixed-effects regression models – statistical power was too low for mixed-effects modeling, and any actual ethnicity-level effects would likely be undetectable with the addition of fixed-effect or random-effect variables. A future study on the effects of ethnicity in YT could recruit a larger number of European American subjects and employ a mixed effects statistical model to more rigorously test the findings of this study – particularly the findings for /ɑɪ/ and PIN-PEN in Chapters 6 and 7.

As Taylor (2011) notes, considering the history of African Americans in Seattle is incomplete without analyzing this population in relation to another racial minority, Asian Americans. Asian Americans constituted the largest racial minority in Seattle until World War II, distinguishing the ethnic/racial makeup of Seattle from that of many other urban centers. Although some Asian

Americans were interviewed for Jean Harris' study of YT, they were not included in this linguistic study. This study also did not capture linguistic data or analyze linguistic features from speakers of Native American or Latinx heritage, even though we know from interviews that Native and Latinx people were a part of the YT community at the time. Future work on linguistic behavior among YT members would benefit from considering a broader swath of ethno-racial peoples.

Taylor (2011) also notes: "Black Seattle, despite its small size and outward appearance of unanimity, was never a single community" (8). While the work in this dissertation could be taken as a partial reflection of AAL in Seattle, I'd like to push back against the implication that the speech described here is representative of AAL in the region. The community of YT members studied here is exceptional in a number of ways – most saliently for the purposes of this project, in terms of the ethno-racial makeup of the community in which they grew up – and this dissertation has even pointed out some ways that the speech of the YT members studied is different from the speech of other African Americans studied in the Pacific Northwest in Wassink (2017). Future work on dialects in the Pacific Northwest should look at a broader range of African American speakers with varied backgrounds.

REFERENCES

- Adank, P., Smits, R., & Van Hout, R. (2004). A comparison of vowel normalization procedures for language variation research. *The Journal of the Acoustical Society of America*, 116(5), 3099-3107.
- Agresti, A., & Barbara, F. Finlay. B.(1997). *Statistical Methods for the Social Sciences*.
- Ash, S., & Myhill, J. (1986). Linguistic correlates of inter-ethnic contact. *Diversity and diachrony*, 33-44.
- Bahktin, M. M. (1981). *The dialogic imagination: four essays* (Ed. Michael Holquist). Austin: University of Texas Press.
- Baugh, J. (1999). *Out of the mouths of slaves: African American language and educational malpractice*. University of Texas Press.
- Baugh, J. G. (1979). *Linguistic Style-Shifting in Black English*.
- Becker, K. (2014). Linguistic repertoire and ethnic identity in New York City. *Language & Communication*, 35, 43-54.
- Becker, K. (2011). The social meaning (s) of raised BOUGHT in New York City: A perceptual approach. *New Ways of Analyzing Variation*, 40.
- Becker, K. (2009). /r/ and the construction of place identity on New York City's Lower East Side 1. *Journal of Sociolinguistics*, 13(5), 634-658.
- Becker, K., Aden, A., & Best, K. (2014). Ideologies of non-accent: Linking perception and production in Oregon English. In *Cascadia Workshop in Sociolinguistics (CWSL)*, University of Victoria, March.
- Becker, K., Aden, A., Best, K., & Jacobson, H. (2016). Variation in West Coast English: The Case of Oregon. *Speech in the western states*, 1, 107-134.
- Bell, A., Eckert, P., & Rickford, J. R. (2002). Back in style: Reworking audience design. *Style and sociolinguistic variation*, 1, 139-169.
- Bell, A. (1999). Styling the other to define the self: A study in New Zealand identity making. *Journal of Sociolinguistics*, 3(4), 523-541.
- Bell, A. (1984). Language style as audience design. *Language in society*, 13(2), 145-204.
- Benor, S. B. (2010). Ethnolinguistic repertoire: Shifting the analytic focus in language and ethnicity. *Journal of Sociolinguistics*, 14(2), 159-183.

- Benson, E. J., Fox, M. J., & Balkman, J. (2011). The bag that Scott bought: The low vowels in northwest Wisconsin. *American Speech*, 86(3), 271-311.
- Biber, D., & Finegan, E. (1989). Styles of stance in English: Lexical and grammatical marking of evidentiality and affect. *Text-interdisciplinary journal for the study of discourse*, 9(1), 93-124.
- Blake, R. (2014). African American and Black as demographic codes. *Language and Linguistics Compass*, 8(11), 548-563.
- Blom, J., & Gumperz, J. (1972). Social Meaning in Structure. *Directions in Sociolinguistics*. New York: Holt, Rinehart, Winston, 409-434.
- Bobo, L. D. (2001). Racial Attitudes and Relations at the Close of the Twentieth Century. *America becoming: Racial trends and their consequences*, 2, 264.
- Boersma, P., & Weenink, D. (2012). Praat: doing phonetics by computer [Computer program]. Version 5.3, retrieved 1 January 2012 from <http://www.praat.org/>
- Bortoni, Ricardo, S.-M. (1985). *The urbanization of rural dialect speakers: a sociolinguistic study in Brazil*. Cambridge: Cambridge UP.
- Britt, E. (2011). "Can the church say amen": Strategic uses of black preaching style at the State of the Black Union. *Language in Society*, 40(2), 211-233.
- Britt, E., & Weldon, T. L. (2015). African American English in the Middle Class. In *The Oxford Handbook of African American Language*.
- Brown, V. R. (1990). Phonetic constraints on the merger of /ɪ/and/ɛ/before nasals in North Carolina and Tennessee. *The SECOL Review*, 14(2), 87-100.
- Bucholtz, M. (2009). *From stance to style: Gender, interaction, and indexicality in Mexican immigrant youth slang*.
- Bucholtz, M. (1997). " Why Be Normal?": Language and Opposition in Nerd Girls' Communities of Practice.
- Bucholtz, M., & Hall, K. (2005). Identity and interaction: A sociocultural linguistic approach. *Discourse studies*, 7(4-5), 585-614.
- Burnham, K. P., & Anderson, D. R. (2004). Multimodel inference: understanding AIC and BIC in model selection. *Sociological methods & research*, 33(2), 261-304.
- Caldbeck, J. (2014, March 27). *Seattle Housing Authority – Part 1*. Retrieved from <http://www.historylink.org/File/10760>

- Chambers, J. K. (2000). Region and language variation. *English World-Wide* 21, 169-199.
- Chambers, J. K. (1994). An introduction to dialect topography. *English World-Wide*, 15(1), 35-53.
- Chambers, J. K. (1973). Canadian raising. *Canadian Journal of Linguistics/Revue canadienne de linguistique*, 18(2), 113-135.
- Clarke, S., Elms, F., & Youssef, A. (1995). The third dialect of English: Some Canadian evidence. *Language Variation and Change*, 7(2), 209-228.
- Cohen, P., Robins, C., Lewis, J., & Labov, W. (1968). *A Study of the Non-standard English of Negro and Puerto Rican Speakers in New York City: The Use of Language in the Speech Community*. US Regional Survey.
- Coupland, N. (2010). The authentic speaker and the speech community. *Language and identities*, 99-112.
- Coupland, N. (2007). *Style: Language variation and identity*. Cambridge University Press.
- Coupland, N. (2003). Sociolinguistic authenticities. *Journal of sociolinguistics*, 7(3), 417-431.
- Coupland, N. (2001). Dialect stylization in radio talk. *Language in society*, 30(3), 345-375.
- Coupland, N. (1984). Accommodation at work: Some phonological data and their implications. *International Journal of the Sociology of Language*, 1984(46), 49-70.
- Coupland, N. (1980). Style-shifting in a Cardiff work-setting. *Language in Society*, 9(1), 1-12.
- Craig, H. K., & Washington, J. A. (2006). *Malik goes to school: Examining the language skills of African American students from preschool-5th grade*. Psychology Press.
- Cukor-Avila, P., & Bailey, G. (2001). The Effects of the Race of the Interviewer on Sociolinguistic Fieldwork. *Journal of Sociolinguistics*, 5(2), 254-70.
- Cutler, C. (2010). Hip-hop, white immigrant youth, and African American Vernacular English: Accommodation as an identity choice. *Journal of English Linguistics*, 38(3), 248-269.
- Cutler, C. A. (1997). Yorkville crossing: A case study of the influence of hip hop culture on the speech of a White middle class adolescent in New York City. *University of Pennsylvania Working Papers in Linguistics*, 4(1), 21.
- Deser, T. (1990). *Dialect transmission and variation: An acoustic analysis of vowels in six urban Detroit families*.
- Di Paolo, M. & Faber, A. (1990). Phonation differences and the phonetic content of the tense-lax contrast in Utah English. *Language Variation and Change* 2(2), 155-204.

- Di Paolo, M., Yaeger-Dror, M., & Wassink, A. B. (2011). Analyzing vowels. *Sociophonetics: A student's guide*, 87-106.
- Droker, H. (1973). Howard Droker interview with Jesse Epstein, March 13, 1973, Seattle, audio and interview notes. University of Washington Libraries Digital Collections.
- Du Bois, J. W. (2007). The stance triangle. *Stancetaking in discourse: Subjectivity, evaluation, interaction*, 164(3), 139-182.
- Eberhardt, M., & Freeman, K. (2015). 'First things first, I'm the realest': Linguistic appropriation, white privilege, and the hip-hop persona of Iggy Azalea. *Journal of Sociolinguistics*, 19(3), 303-327.
- Eckert, P. (2012). Three waves of variation study: The emergence of meaning in the study of sociolinguistic variation. *Annual review of Anthropology*, 41, 87-100.
- Eckert, P. (2008a). Where do ethnolects stop? *International journal of bilingualism*, 12(1-2), 25-42.
- Eckert, P. (2008b). Variation and the indexical field. *Journal of sociolinguistics*, 12(4), 453-476.
- Eckert, P. (2004). Vowel shifts in Northern California and the Detroit suburbs: Northern California vowels. Unpublished manuscript. Stanford University. <http://web.stanford.edu/~eckert/vowels.html>.
- Eckert, P. (2000). *Language variation as social practice: The linguistic construction of identity in Belten High*. Wiley-Blackwell.
- Edwards, W. F. (1997). The variable persistence of Southern vernacular sounds in the speech of inner-city Black Detroiters. *Language variety in the South revisited*, 76-86.
- Erker, D. (2012). Of Categories and continua: Relating discrete and gradient properties of sociophonetic variation. *University of Pennsylvania Working Papers in Linguistics* 18(2).
- Fabricius, A. H. (2007). Variation and change in the TRAP and STRUT vowels of RP: a real time comparison of five acoustic data sets. *Journal of the International Phonetic Association*, 37(3), 293-320.
- Fasold, R., & Wolfram, W. (1970). Some linguistic features of Negro dialect in Teaching Standard English in the Inner City, eds. *Ralph W. Fasold and Roger W. Shuy*. Washington, DC: Center for Applied Linguistics.
- Fix, S. (2014). AAE as a bounded ethnolinguistic resource for white women with African American ties. *Language & communication*, 35, 55-74.

- Giles, H., Taylor, D. M., & Bourhis, R. (1973). Towards a theory of interpersonal accommodation through language: Some Canadian data. *Language in society*, 2(2), 177-192.
- Giles, H., Coupland, N., & Coupland, J. (1991). "Accommodation Theory: Communication, Context, and Consequence." In *Contexts of Accommodation: Developments in Applied Sociolinguistics*, ed. Howard Giles, Justine Coupland, and Nikolas Coupland, 1-68. Cambridge: Cambridge Univ. Press.
- Giles, H., & Powesland, P. F. (1975). *Speech style and social evaluation*. Academic Press.
- Goffman, E. (1981). *Forms of talk*. University of Pennsylvania Press.
- Gordon, Matthew J. (2000). Phonological correlates of ethnic identity: Evidence of divergence? *American Speech* 75:115-136.
- Green, Lisa J. (2002). *African American English: A Linguistic Introduction*. Cambridge, U.K.: Cambridge University Press.
- Grieser, J. (2015). *The Language of Professional Blackness: African American English at the Intersection of Race, Place, and Class in Southeast, Washington, DC* (Doctoral dissertation, Georgetown University).
- Grieser, J. (2010). Audience-Directed Intraspeaker AAVE Variation: A Study in Washington, D.C. Paper presented at Sociolinguistics Symposium 18, University of Southampton.^[SEP]
- Gumperz, J. J. (1972). The communicative competence of bilinguals: Some hypotheses and suggestions for research. *Language in society*, 1(1), 143-154.
- Gumperz, J. J. (1964). Linguistic and social interaction in two communities. *American Anthropologist* 66: 137-154.
- Gumperz, J. J. (1964). Linguistic and social interaction in two communities. *American anthropologist*, 66(6), 137-153. Gumperz, J., & Cook-Gumperz, J. (2007). Discourse, cultural diversity and communication: A linguistic anthropological perspective. *Handbook of intercultural communication*, 7, 13-29.
- Guy, G. R. (2013). The cognitive coherence of sociolects: How do speakers handle multiple sociolinguistic variables?. *Journal of Pragmatics*, 52, 63-71.
- Guy, G. R., & Cutler, C. (2011). Speech style and authenticity: Quantitative evidence for the performance of identity. *Language Variation and Change*, 23(1), 139-162.

- Hagiwara, R. (1997). Dialect variation and formant frequency: The American English vowels revisited. *The Journal of the Acoustical Society of America*, 102(1), 655-658.
- Hall-Lew, L. (2013). 'Flip-flop' and mergers-in-progress. *English Language & Linguistics*, 17(2), 359-390.
- Hay, J., Jannedy, S., & Mendoza-Denton, N. (1999, August). Oprah and/ay: Lexical frequency, referee design and style. In *Proceedings of the 14th international congress of phonetic sciences* (pp. 1389-1392). Berkeley, CA: University of California.
- Hindle, D. M. (1979). The social and situational conditioning of phonetic variation.
- Holliday, N. R. (2016). Identity Performance among Black/Biracial Men through Intonation: Examining Pitch Accents and Peak Delay. *University of Pennsylvania Working Papers in Linguistics*, 22(2), 9.
- Ingle, J. K., Wright, R., & Wassink, A. (2005). Pacific Northwest vowels: A Seattle neighborhood dialect study. *The Journal of the Acoustical Society of America*, 117(4), 2459-2459.
- Jeffrey, H. (1968). *A Report of Racial Distribution among Pupils and Employees of the Seattle, Washington School District no. 1 from 1957 through 1967*. Seattle, Wash.: Seattle Public Schools Planning and Research Office.
- Johnstone, B., & Kiesling, S. F. (2008). Indexicality and experience: Exploring the meanings of /aw/-monophthongization in Pittsburgh. *Journal of sociolinguistics*, 12(1), 5-33.
- Kendall, T., & Wolfram, W. (2009). Local and external language standards in African American English. *Journal of English Linguistics*, 37(4), 305-330.
- Kennedy, R., & Grama, J. (2012). Chain shifting and centralization in California vowels: An acoustic analysis. *American Speech*, 87(1), 39-56.
- King, S. (2016). On negotiating racial and regional identities: Vocalic variation among African Americans in Bakersfield, California. *University of Pennsylvania Working Papers in Linguistics*, 22(2), 12.
- Kroskrity, P. V. (1999). Language ideologies, language shift, and the imagination of a Western Mono Community: The recontextualization of a Coyote story. *Language and ideology*, 1, 270-289.
- Labov, W. (2011). *Principles of linguistic change, volume 3: Cognitive and cultural factors* (Vol. 36). John Wiley & Sons.

- Labov, W. (1998). Co-existent systems in African-American vernacular English. *African-American English: Structure, History and Use*, 110-153.
- Labov, William (1994). *Principles of linguistic change. Vol. 1: Internal factors*. Oxford: Blackwell Publishers.
- Labov, W. (1991). The three dialects of English. *New ways of analyzing sound change*, 5, 1-44.
- Labov, W. (1973). The linguistic consequences of being a lame. *Language in society*, 2(1), 81-115.
- Labov (1972). *Sociolinguistic patterns*. Philadelphia: University of Pennsylvania Press.
- Labov, W. (1972a). The isolation of contextual styles. *Sociolinguistic patterns*, 70-109.
- Labov, W. (1972). Some principles of linguistic methodology. *Language in society*, 1(1), 97-120.
- Labov, W. (1969). The logic of non-standard English. *Georgetown monographs on language and linguistics*, 22(1), 1-31.
- Labov, W., Ash, S., & Boberg, C. (2006). *The atlas of North American English: Phonetics, phonology and sound change*. Walter de Gruyter.
- Lanehart, S. (Ed.). (2015). *The Oxford Handbook of African American Language*. Oxford University Press.
- Lehiste, I. (1970). Temporal Organization of Higher-Level Linguistic Units. *The Journal of the Acoustical Society of America*, 48(1A), 111-111.
- Le Page, R. B., & Tabouret-Keller, A. (1985). *Acts of identity: Creole-based approaches to ethnicity and language*. Cambridge: Cambridge University Press.
- Linnes, K. (1998). Middle-class AAVE versus middle-class bilingualism: Contrasting speech communities. *American Speech*, 73(4), 339-367.
- Lubrano, A. (2004). *Limbo: Blue-collar roots, white-collar dreams*. John Wiley & Sons.
- McLarty, Jason, (2016). The perception of prosodic prominence in African American English by naïve listeners. Paper Presented at New Ways of Analyzing Variation 45, Vancouver, British Columbia.
- Miller, E. R. (2013). Positioning selves, doing relational work and constructing identities in interview talk. *Journal of Politeness Research*, 9(1), 75-95.
- Milroy, L., & Gordon, M. (2003). Sociolinguistics: Method and interpretation (Vol. 13). *Walden, MA: Blackwell*.

- Moore, E., & Podesva, R. (2009). Style, indexicality, and the social meaning of tag questions. *Language in Society*, 38(4), 447-485.
- Moreton, E., & Thomas, E. R. (2007). Origins of Canadian Raising in voiceless-coda effects: a case study in phonologization. *Laboratory phonology*, 9, 37-64.
- Myers-Scotton, C. (Ed.). (1998). *Codes and consequences: Choosing linguistic varieties*. Oxford University Press.
- Nearey, T. M. (1978). Phonetic feature systems for vowels.
- Nguyen, J. (2006). *The changing social and linguistic orientation of the African American middle class*. Ann Arbor: University of Michigan dissertation.
- Nielsen, R. (2012). *Reassembling Ethnicity: Stylistic Variation in African American English Prosody* (Doctoral dissertation, Georgetown University).
- Noels, K. A. (2014). Language variation and ethnic identity: A social psychological perspective. *Language & Communication*, 35, 88-96.
- Nylund, A. (2013). *Phonological variation at the intersection of ethnoracial identity, place, and style in Washington, DC* (Doctoral dissertation, Georgetown University).
- Ochs, E. (1992). 14 Indexing gender. *Rethinking context: Language as an interactive phenomenon*, 11, 335.
- Oxley, M. (2015). *Southern, Texan, or Both?: Southernness and Identity in Deer Park, Texas* (Doctoral dissertation).
- Payne, A. (1980). Factors controlling the acquisition of the Philadelphia dialect by out-of-state children. *Locating language in time and space*, 1, 143-78.
- Peräkylä, A. (2011). Validity in research on naturally occurring social interaction. *Qualitative research*, 365, 382.
- Piiparinen, R. (2013). The Persistence of Failed History: 'White Infill' as the New 'White Flight'?. *New Geography*, 184.
- Plichta, B. (2009). Akustyk for Praat. Version 1.8 [Computer program]. Retrieved August 7, 2009.
- Podesva, R. J., Hall-Lew, L., Brenier, J., Starr, R., Lewis, S., Hernandez-Campoy, J. M., & Cutillas-Espinosa, J. A. (2012). Condoleezza Rice and the sociophonetic construction of identity. *JM Hernández-Campoy y JA Cutillas-Espinosa (eds.)*, 65-80.

- Podesva, Robert J, 2007. "Phonation type as a stylistic variable: The use of falsetto in constructing a persona." *Journal of sociolinguistics* 11(4): 478-504.
- Preston, D. R. (2010). Language, people, salience, space: perceptual dialectology and language regard. *Dialectologia: revista electrònica*, (5), 87-131.
- Preston, D. R. (1991). Sorting out the variables in sociolinguistic theory. *American Speech*, 66(1), 33-56.
- Purnell, T. C., & Yaeger-Dror, M. (2010). Accommodation to the locally dominant norm: A special issue. *American Speech*, 85(2), 115-120.
- Quinn, L. M., & Pawasarat, J. 2003. *Racial integration in urban America: A block level analysis of African American and White housing patterns*. University of Wisconsin Milwaukee.
- R Core Team (2012). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL <https://www.R-project.org/>.
- Rahman, J. (2008). Middle-class African Americans: Reactions and attitudes toward African American English. *American Speech*, 83(2), 141-176.
- Rahman, J. (2007). An ay for an ah: Language of survival in African American narrative comedy. *American Speech*, 82(1), 65-96.
- Rahman, J. (2004). *It's a serious business: The linguistic construction of middle class white characters by African American narrative comedians*. Stanford, CA: Stanford University dissertation.
- Reed, C. E. (1965). Linguistic Atlas of the Pacific Northwest (LAPNW). Special Collections Repository of the Library, University of Georgia, Athens.
- Reed, C. E. (1961). The pronunciation of English in the Pacific Northwest. *Language*, 37(4), 559-564.
- Reed, C. E. (1952). The pronunciation of English in the state of Washington. *American Speech*, 27(3), 186-189.
- Renn, J., & Terry, J. M. (2009). Operationalizing style: Quantifying the use of style shift in the speech of African American adolescents. *American Speech*, 84(4), 367-390.
- Rickford, J. R. (2014). Situation: Stylistic variation in sociolinguistic corpora and theory. *Language and Linguistic Compass* 8(11): 590-603.
- Rickford, J. R. (2011). Le Page's theoretical and applied legacy in sociolinguistics and creole studies. *Variation in the Caribbean: From creole continua to individual agency*,

Amsterdam/Philadelphia: Benjamins.

- Rickford, J. R. (1999). Phonological and grammatical features of African American Vernacular English (AAVE). *African American Vernacular English, JR Rickford, Ed. Malden, MA: Blackwell*, 3-14.
- Rickford, J. R., & McNair-Knox, F. (1994). Addressee-and topic-influenced style shift: A quantitative sociolinguistic study. *Sociolinguistic perspectives on register*, 235-276.
- Rickford, J., & Price, M. (2013). Girlz II women: Age-grading, language change and stylistic variation. *Journal of Sociolinguistics*, 17(2), 143-179.
- Rickford, J. R., & Rickford, R. J. (2000). *Spoken soul: The story of black English*. New York: Wiley.
- Riebold, J. M. (2015). The social distribution of a regional change:/æg, ehg, eyg/. *Washington State. Seattle: University of Washington dissertation.*
- Riebold, J. (2012). Please merge ahead: the vowel space of Pacific Northwest English. Northwest Linguistics Conference 28, University of Washington, Seattle, WA, 7 Apr 2012.
- Romaine, S. (1978). Post-vocalic /r/ in Scottish English: Sound change in progress? In Trudgill, Peter. ed., *Sociolinguistic Patterns in British English*. London: Edward Arnold. pp. 144-58.
- Sadlier-Brown, E. (2012). Homogeneity and autonomy of Canadian Raising. *World Englishes*, 31(4), 534-548.
- Scanlon, M. (2007). *A Social Network Study of a Seattle Neighborhood*. MA Thesis; University of Washington.
- Scanlon, M., & Wassink, A. B. (2010a). African American English in urban Seattle: Accommodation and intraspeaker variation in the Pacific Northwest. *American Speech*, 85(2), 205-224.
- Scanlon, M., & Wassink, A. B. (2010b). Using acoustic trajectory information in studies of merger. *University of Pennsylvania Working Papers in Linguistics*, 16(2), 19.
- Schilling, N. (2013). Investigating stylistic variation. *The handbook of language variation and change*, 325-349.
- Schilling-Estes, N. (2004). Constructing ethnicity in interaction. *Journal of Sociolinguistics*, 8(2), 163-195.

- Seattle Housing Authority (1961–68). *Annual Tenant Census. 8 vols. Seattle, Wash.:* Housing Authority of the City of Seattle.
- Seattle Housing Authority (2018). *History*. Retrieved from <https://www.seattlehousing.org/about-us/history>
- Sharma, D. (2011). Style repertoire and social change in British Asian English. *Journal of Sociolinguistics, 15*(4), 464-492.
- Sharma, D., & Rampton, B. (2015). Lectal focusing in interaction: A new methodology for the study of style variation. *Journal of English Linguistics, 43*(1), 3-35.
- Silverstein, M. (2003). Indexical order and the dialectics of sociolinguistic life. *Language & communication, 23*(3-4), 193-229.
- Smitherman, G. (2006). *Word from the mother: Language and African Americans*. Routledge.
- Smitherman, G. (1991). "What Is Africa to Me?": Language, Ideology, and African American. *American Speech, 66*(2), 115-132.
- Snell, J. (2010). From sociolinguistic variation to socially strategic stylisation 1. *Journal of Sociolinguistics, 14*(5), 630-656.
- Squizzero, R. (2009). Bulls and bowls in china shops: A perceptual experiment investigating pre-lateral vowels in Seattle English (Undergraduate thesis). University of Washington.
- Stanley, J. A. (2018). Changes in the timber industry as a catastrophic event: BAG-raising in Cowlitz County, Washington. *University of Pennsylvania Working Papers in Linguistics, 24*(2), 16.
- Swan, J. T. (2016). Language ideologies, border effects and dialectal variation: Evidence from /æ. aʊ/, and /aɪ/ in Seattle, WA and Vancouver, BC. *Chicago, IL: University of Chicago PhD dissertation*.
- Tarone, E. E. (1973). Aspects of intonation in Black English. *American Speech, 48*(1/2), 29-36.
- Taylor, D. (1971). Grammatical and lexical affinities of creoles. *Pidginization and creolization of languages*, ed. by Dell Hymes, 293-6.
- Taylor, Q. (2011). *The Forging of a Black Community: Seattles Central District from 1870 through the Civil Rights Era*. University of Washington Press.
- Thomas, E. R. (2007). Phonological and phonetic characteristics of African American vernacular English. *Language and Linguistics Compass, 1*(5), 450-475.

- Thomas, E. R. (2001). *An acoustic analysis of vowel variation in New World English* (Vol. 85, p. 22). Durham, NC: Duke University Press.
- Thomas, E. R., & Carter, P. M. (2006). Prosodic rhythm and African American english. *English World-Wide*, 27(3), 331-355.
- Thomas, E. R., Wassink, A. B., Llammas, C., & Watt, D. (2010). Variation and Identity in African-American English. *Language and identities*, 157.
- Tolnay, S. E. (2003). The African American “great migration” and beyond. *Annual Review of Sociology*, 29(1), 209-232.
- Tracy, K., & Robles, J. S. (2013). *Everyday talk: Building and reflecting identities*. Guilford Press.
- Trudgill, P. (1986). Dialects in contact.
- Umaña-Taylor, A. J., & Douglass, S. (2017). Developing an Ethnic-Racial Identity Intervention from a Developmental Perspective: Process, Content, and Implementation of the Identity Project. In *Handbook on Positive Development of Minority Children and Youth* (pp. 437-453). Springer, Cham.
- Van Hofwegen, J., & Wolfram, W. (2010). Coming of age in African American English: A longitudinal study 1. *Journal of Sociolinguistics*, 14(4), 427-455.
- Warren, M. (2006). *Features of naturalness in conversation* (Vol. 152). John Benjamins Publishing.
- Wassink, A. B. (2017). The Vowels of Washington State (2017) In *Speech in the Western States: vol. 1: the coastal states* (Fridland, V. Kendall, T. Wassink, A.B. and Evans, B., eds.). *Publications of the American Dialect Society*. Duke University Press.
- Wassink, A. B. (2015). Sociolinguistic Patterns in Seattle English. *Language Variation and Change*, 27(1), 31-58.
- Wassink, A. B. (2006). A geometric representation of spectral and temporal vowel features: Quantification of vowel overlap in three linguistic varieties. *The Journal of the Acoustical Society of America*, 119(4), 2334-2350.
- Wassink, A. B., & Riebold, J. M. (2013). Individual variation and linguistic innovation in the American Pacific Northwest. In *Chicago Linguistic Society (CLS 49) Workshop on Sound Change Actuation* (pp. 18-20).
- Wassink, A., Squizzero, R., Scanlon, M., Schirra, R., & Conn, J. (2009). Effects of Style and

- Gender on Fronting and Raising of /æ/, /e:/ and /ɛ/ before /g/ in Seattle English. *New Ways of Analyzing Variation* 38, Ottawa, CA.
- Watt, D., & Fabricius, A. H. (2011, August). A Measure of Variable Planar Locations Anchored on the Centroid of the Vowel Space: A Sociophonetic Research Tool. In *ICPhS* (pp. 2102-2105).
- Weldon, T. (2004, September). African American English in the middle classes: Exploring the other end of the continuum. In *NWAV (E): 2004 meeting. Ann Arbor, Michigan*.
- Wolfram, W., Myrick, C., Forrest, J., & Fox, M. J. (2016). The Significance of Linguistic Variation in the Speeches of Rev. Dr. Martin Luther King Jr. *American speech*, 91(3), 269-300.
- Wolfram, W. (2007). Sociolinguistic folklore in the study of African American English. *Language and Linguistics Compass*, 1(4), 292-313.
- Wolfram, W. (2004). The grammar of urban African American vernacular English. *Handbook of varieties of English*, 2, 111-32.
- Wolfram, W. (1970). Sociolinguistic alternatives in teaching reading to nonstandard speakers. *Reading Research Quarterly*, 9-33.
- Wolfram, W. A. (1969). A Sociolinguistic Description of Detroit Negro Speech. *Urban Language Series*, No. 5.
- Kendall, T., & Wolfram, W. (2009). Local and external language standards in African American English. *Journal of English Linguistics*, 37(4), 305-330.
- Wolfram, W., & Schilling-Estes, N. (2006). *American English: Dialects and Variants* Second Edition. *Malden [ao]: Blackwell Publishing*, 452, 50.
- Yaeger-Dror, M., & Purnell, T. (2010). Ethnicity and language variation [Special Issue]. *Journal of English Linguistics*, 38(3).
- Yaeger-Dror, M., & Thomas, E. R. (Eds.). (2010). *African American English speakers and their participation in local sound changes: A comparative study*. Duke University Press for the American Dialect Society.
- Zhang, Q. (2008). Rhotacization and the 'Beijing Smooth Operator': The social meaning of a linguistic variable 1. *Journal of Sociolinguistics*, 12(2), 201-222.

APPENDIX A – INTERVIEW GUIDE

Family history

Goal	Questions
<i>Individual geographical history</i>	Where subjects came from (what region? State? City?)
<i>Family geographical history</i>	Places subjects' families have lived
<i>Family ethnic/racial history</i>	What kinds of people were there where your family came from? Was there a good mix of people? Was it diverse? Follow-up: So you would consider your family...
<i>qualitative idea of how connected individuals are to their heritage / how different heritage location and Pacific Northwest are</i>	Family stories Were your family members a lot like people from that region/state/city? Was Yesler Terrace a lot like the other places your family is from? Was there anything that struck you (or your mother/father/other family members) about Yesler Terrace/Seattle/Pacific Northwest when you got out here?

Memories of growing up in Yesler Terrace

Goal	Questions
<i>voluntary association</i>	Who hung out with whom in Yesler Terrace and outside of Yesler Terrace?
<i>activities</i>	What did you do as kids? Where did you hang out? Did different groups of kids do different activities? What did they do? For example, were boys involved with different groups than girls?
<i>activities outside Terrace</i>	What other (non-Terrace) communities were people involved with?
<i>activities outside Terrace (cont.)</i>	Did anyone have ties to International District? City-wide political or social groups? What groups?
<i>affective ties</i>	Who was most important to you in Yesler Terrace? Where were these people from?

	How far back did you guys go? Do you still talk with them today?
<i>interactive ties</i>	With whom did you spend time most frequently? Where were these people from? How far back did you guys go? Do you still talk with them today?
<i>exchange ties</i>	Who did you go to for help? Who did you exchange advice or help with? Where were these people from? How far back did you guys go? Do you still talk with them today?
<i>open-ended; qualitative sense of meaning of Yesler Terrace</i>	How have things changed since then?

Community in Yesler Terrace

Goal	Questions
<i>voluntary association</i>	Who keeps in touch with whom now?
<i>activities</i>	What Terrace-based activities are people involved with now? Who is involved?
<i>qualitative sense of community</i>	Why have people left Yesler Terrace? Have people stayed? If so, why have they stayed? What does it mean to be a community member of Yesler Terrace?

How people talk in Yesler Terrace

Goal	Questions
<i>Qualitative info on speech perception</i>	Were there times growing up when you noticed someone talked differently than you (outside or inside Yesler Terrace)? Follow-up: Can you tell a story about noticing a difference? Follow-up: How did that person / those people speak differently? Do people talk differently now that they've left Yesler Terrace? Follow-up: If so, how did they speak then? How do they speak now?

Follow-up questions will be tailored to the individual speaker.

APPENDIX B – INTERVIEW TRANSCRIBING CONVENTIONS

(adapted from DuBois 1991)

Units

Intonation unit	{ carriage return }
Truncated intonation unit	-
Word	{ space }
Truncated word	-

Speakers

Speaker identity/turn start	:
Speech overlap	[]

Transitional continuity

Final	.
Continuing	,
Appeal	?

Pause

Long	--
Short	-

Vocal noises

Vocal noises	()
Inhalation	(H)
Exhalation	(Hx)
Laughter	@

Quality

Laugh quality	<@ @>
Quotation quality	<Q Q>

Transcriber's perspective

Researcher's comment	(())
Uncertain hearing	<X X>
Indecipherable syllable	X

APPENDIX D – PIN-PEN ANALYSIS (CHAPTER 6)

Regress F1_20 on x

Call:

```
lm(formula = norm.F1_20 ~ subject_ethnicity + duration + vowel_ipa +
    sex_code + subject_ethnicity:duration + subject_ethnicity:vowel_ipa +
    duration:vowel_ipa + duration:sex_code + vowel_ipa:sex_code +
    subject_ethnicity:duration:vowel_ipa)
```

Residuals:

Min	1Q	Median	3Q	Max
-0.53890	-0.08116	0.00804	0.07526	0.34397

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	-0.049091	0.067649	-0.726	0.468403
subject_ethnicityCauc	0.086841	0.045840	1.894	0.058784 .
duration	-1.141045	0.536248	-2.128	0.033873 *
vowel_ipa\\icN	0.011786	0.059820	0.197	0.843896
sex_code	-0.003038	0.036481	-0.083	0.933664
subject_ethnicityCauc:duration	-0.505544	0.419137	-1.206	0.228367
subject_ethnicityCauc: vowel_ipa\\icN	-0.338095	0.063744	-5.304	1.75e-07 ***
duration:vowel_ipa\\icN	0.279508	0.269718	1.036	0.300599
duration:sex_code	0.426304	0.289365	1.473	0.141358
vowel_ipa\\icN:sex_code	-0.051584	0.029398	-1.755	0.079970 .
subject_ethnicityCauc: duration:vowel_ipa\\icN	2.050718	0.610819	3.357	0.000851 ***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.1266 on 468 degrees of freedom

Multiple R-squared: 0.1884, Adjusted R-squared: 0.1711

F-statistic: 10.86 on 10 and 468 DF, p-value: < 2.2e-16

Regress F1_50 on x

Call:

```
lm(formula = norm.F1_50 ~ subject_ethnicity + duration + vowel_ipa +
    sex_code + subject_ethnicity:vowel_ipa + duration:vowel_ipa +
    duration:sex_code + vowel_ipa:sex_code)
```

Residuals:

```
   Min      1Q  Median      3Q      Max
-0.61613 -0.07474  0.00395  0.07304  0.54369
```

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	0.014913	0.059819	0.249	0.8032
subject_ethnicityCauc	-0.007363	0.024389	-0.302	0.7629
duration	-0.685281	0.433427	-1.581	0.1145
vowel_ipa\\icN	-0.032697	0.062371	-0.524	0.6004
sex_code	-0.023326	0.033810	-0.690	0.4906
subject_ethnicityCauc:				
vowel_ipa\\icN	-0.159385	0.036960	-4.312	1.97e-05 ***
duration:vowel_ipa\\icN	0.496797	0.258642	1.921	0.0554 .
duration:sex_code	0.419632	0.251802	1.667	0.0963 .
vowel_ipa\\icN:sex_code	-0.045043	0.031498	-1.430	0.1534

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.1359 on 470 degrees of freedom

Multiple R-squared: 0.1884, Adjusted R-squared: 0.1746

F-statistic: 13.64 on 8 and 470 DF, p-value: < 2.2e-16

Regress F1_80 on x

Call:

lm(formula = norm.F1_80 ~ subject_ethnicity + duration + vowel_ipa + sex_code + subject_ethnicity:vowel_ipa + duration:sex_code)

Residuals:

Min	1Q	Median	3Q	Max
-0.83886	-0.07846	0.00963	0.09758	0.54958

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	-0.006972	0.062679	-0.111	0.9115
subject_ethnicityCauc	-0.022330	0.026820	-0.833	0.4055
duration	-0.097876	0.502014	-0.195	0.8455
vowel_ipa\\icN	-0.095474	0.017586	-5.429	9.08e-08 ***
sex_code	-0.047624	0.036352	-1.310	0.1908
subject_ethnicityCauc:				
vowel_ipa\\icN	-0.163571	0.035688	-4.583	5.86e-06 ***
duration:sex_code	0.587849	0.303754	1.935	0.0536 .

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.1647 on 472 degrees of freedom

Multiple R-squared: 0.2671, Adjusted R-squared: 0.2578

F-statistic: 28.67 on 6 and 472 DF, p-value: < 2.2e-16

Regress F2_20 on x

Call:

```
lm(formula = norm.F2_20 ~ subject_ethnicity + duration + vowel_ipa +
    sex_code + subject_ethnicity:duration + subject_ethnicity:vowel_ipa +
    duration:vowel_ipa + subject_ethnicity:sex_code + vowel_ipa:sex_code +
    subject_ethnicity:duration:vowel_ipa)
```

Residuals:

```
   Min      1Q  Median      3Q      Max
-0.42103 -0.08385 -0.00342  0.08391  0.41695
```

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	1.08550	0.03852	28.183	< 2e-16 ***
subject_ethnicityCauc	-0.22426	0.13596	-1.649	0.0997 .
duration	1.22485	0.15834	7.735	6.38e-14 ***
vowel_ipa\\icN	-0.06279	0.05766	-1.089	0.2768
sex_code	0.02051	0.01898	1.080	0.2806
subject_ethnicityCauc:duration	-0.13904	0.34621	-0.402	0.6882
subject_ethnicityCauc:				
vowel_ipa\\icN	0.11169	0.06178	1.808	0.0713 .
duration:vowel_ipa\\icN	0.11217	0.25906	0.433	0.6652
subject_ethnicityCauc:sex_code	0.30344	0.12514	2.425	0.0157 *
vowel_ipa\\icN:sex_code	0.04378	0.02852	1.535	0.1254
subject_ethnicityCauc:				
duration:vowel_ipa\\icN	-1.17132	0.59101	-1.982	0.0481 *

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.1226 on 468 degrees of freedom
 Multiple R-squared: 0.2222, Adjusted R-squared: 0.2056
 F-statistic: 13.37 on 10 and 468 DF, p-value: < 2.2e-16

Regress F2_50 on x

Call:

lm(formula = norm.F2_50 ~ subject_ethnicity + duration + vowel_ipa + sex_code + subject_ethnicity:sex_code)

Residuals:

Min	1Q	Median	3Q	Max
-0.37384	-0.08054	-0.00703	0.08598	0.39403

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	1.08897	0.02700	40.335	< 2e-16 ***
subject_ethnicityCauc	-0.19409	0.11989	-1.619	0.1061
duration	0.84237	0.10561	7.976	1.14e-14 ***
vowel_ipa\\icN	0.04879	0.01075	4.541	7.13e-06 ***
sex_code	0.03025	0.01334	2.268	0.0238 *
subject_ethnicityCauc:sex_code	0.26393	0.11688	2.258	0.0244 *

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.1155 on 473 degrees of freedom

Multiple R-squared: 0.1692, Adjusted R-squared: 0.1604

F-statistic: 19.27 on 5 and 473 DF, p-value: < 2.2e-16

Regress F2_80 on x

Call:

lm(formula = norm.F2_80 ~ subject_ethnicity + duration + vowel_ipa + sex_code + subject_ethnicity:sex_code)

Residuals:

Min	1Q	Median	3Q	Max
-0.53253	-0.08544	-0.00245	0.08739	0.38205

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	1.10380	0.02959	37.308	< 2e-16 ***
subject_ethnicityCauc	-0.21080	0.13139	-1.604	0.1093
duration	0.19226	0.11573	1.661	0.0973 .
vowel_ipa\\icN	0.07269	0.01178	6.173	1.45e-09 ***
sex_code	0.02626	0.01462	1.796	0.0731 .
subject_ethnicityCauc:sex_code	0.29012	0.12809	2.265	0.0240 *

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.1266 on 473 degrees of freedom

Multiple R-squared: 0.1223, Adjusted R-squared: 0.113

F-statistic: 13.18 on 5 and 473 DF, p-value: 4.934e-12

APPENDIX E – LOW BACK MERGER ANALYSIS

Speaker	lexically fronted <i>got</i> ?	<i>got</i> F1 != cot F1?	<i>cot</i> F1 != caught F1?	<i>cot</i> F2 != caught F2?	<i>cot</i> distance != caught distance?	<i>cot</i> duration != caught duration?	How front is <i>cot</i> ? (realized as normalized F2, distance between [i] (0.0) and [u] (1.0))	How front is caught? (realized as normalized F2, distance between [i] (0.0) and [u] (1.0))
YT African Americans (n=15)	sig: <0.001	near-sig: < 0.003						
1	t = 6.8433, df = 10.268, p-value = 3.941e-05	t = -1.348, df = 9.9139, p-value = 0.2076	t = 1.0383, df = 16.485, p-value = 0.3141	t = 2.6536, df = 13.013, p-value = 0.01986	t = 1.1514, df = 12.262, p-value = 0.2715	t = 1.4264, df = 9.8892, p-value = 0.1845	0.7998619	0.934343
2	t = 0.72536, df = 2.1494, p-value = 0.539	t = -2.6331, df = 13.365, p-value = 0.02028	t = 4.8361, df = 35.675, p-value = 2.525e-05	t = 4.2915, df = 34.469, p-value = 0.0001364	t = 0.41861, df = 32.752, p-value = 0.6782	t = 1.6833, df = 37.656, p-value = 0.1006	0.7869617	0.9316724
3	t = 7.0977, df = 5.955, p-value = 0.0004061	t = -2.7439, df = 5.0971, p-value = 0.03978	t = 3.6955, df = 30.777, p-value = 0.0008513	t = 3.8702, df = 24.894, p-value = 0.000695	t = 0.72947, df = 30.387, p-value = 0.4713	t = 1.8311, df = 27.759, p-value = 0.07784	0.7423562	0.8815498
4	t = 2.9503, df = 2.5652, p-value = 0.07279	t = -1.4086, df = 10.176, p-value = 0.1888	t = 2.9605, df = 33.299, p-value = 0.005625	t = 4.3813, df = 45.615, p-value = 6.85e-05	t = 3.454, df = 38, p-value = 0.001372	t = -1.1744, df = 38.854, p-value = 0.2474	0.7206876	0.859176
5	t = 8.2638, df = 15.09, p-value = 5.522e-07	t = -8.5713, df = 12.528, p-value = 1.359e-06	t = 3.7792, df = 34.706, p-value = 0.0005936	t = 3.1038, df = 36.384, p-value = 0.003686	t = 0.39994, df = 34.994, p-value = 0.6916	t = -0.84968, df = 38.58, p-value = 0.4007	0.9053233	1.021244
6	t = 6.8606, df = 11.795, p-value = 1.908e-05	t = -2.125, df = 4.2659, p-value = 0.09648	t = 3.8665, df = 33.4, p-value = 0.0004838	t = 4.6337, df = 36.938, p-value = 4.361e-05	t = 0.65631, df = 36.951, p-value = 0.5157	t = 2.5536, df = 32.543, p-value = 0.01554	0.7386073	0.8777185
7	NA	NA	t = -0.7546, df = 36.842, p-value = 0.4553	t = 0.5221, df = 32.589, p-value = 0.6052	t = 0.42047, df = 37.903, p-value = 0.6765	t = 0.067165, df = 37.521, p-value = 0.9468	0.8310662	0.8478079
8	t = 2.2502, df = 1.0822, p-value = 0.2509	t = 0.69716, df = 15.716, p-value = 0.4959	t = 2.8109, df = 36.86, p-value = 0.007865	t = 2.0271, df = 34.566, p-value = 0.05041	t = 0.55785, df = 34.121, p-value = 0.5806	t = -0.6614, df = 28.917, p-value = 0.5136	0.7365983	0.8019887
9	t = 2.9594, df = 2.0653, p-value = 0.09407	t = -0.07004, df = 6.9279, p-value = 0.9461	t = 1.5102, df = 22.427, p-value = 0.1450	t = 3.925, df = 19.791, p-value = 0.0008524	t = 1.3941, df = 26.993, p-value = 0.1747	t = -0.65636, df = 25.653, p-value = 0.5174	0.888264	1.07819
10	t = 5.9003, df = 18.786, p-value = 1.163e-05	t = -2.1095, df = 12.705, p-value = 0.05534	t = -0.2068, df = 36.642, p-value = 0.8373	t = 3.9699, df = 36.081, p-value = 0.0003282	t = 1.6306, df = 26.704, p-value = 0.1147	t = 0.99853, df = 31.374, p-value = 0.3257	0.7484727	0.8872322

Speaker	lexically fronted <i>got?</i>	<i>got</i> F1 != cot F1?	cot F1 != caught F1?	cot F2 != caught F2?	cot distance != caught distance?	cot duration != caught duration?	How front is cot? (realized as normalized F2, distance between [i] (0.0) and [u] (1.0))	How front is caught? (realized as normalized F2, distance between [i] (0.0) and [u] (1.0))
YT African Americans (n=15)	sig: <0.001	near-sig: < 0.003						
11	t = 5.6035, df = 4.3018, p-value = 0.004001	t = -1.3476, df = 2.2707, p-value = 0.2965	t = 2.2831, df = 33.924, p-value = 0.02881	t = 6.0089, df = 38.206, p-value = 5.426e-07	t = 0.1975, df = 39.569, p-value = 0.8445	t = 0.76758, df = 36.155, p-value = 0.4477	0.780329	0.9160814
12	t = 5.8805, df = 2.4469, p-value = 0.01694	t = -3.0869, df = 3.839, p-value = 0.03876	t = 3.9013, df = 53.304, p-value = 0.0002702	t = 3.4935, df = 57.835, p-value = 0.0009211	t = 0.19301, df = 59.057, p-value = 0.8476	t = -0.03306, df = 46.381, p-value = 0.9738	0.827689	0.8705659
13	t = 5.289, df = 2.5094, p-value = 0.02039	t = -0.2143, df = 2.7215, p-value = 0.8453	t = 3.0293, df = 37.403, p-value = 0.004427	t = 3.6605, df = 34.857, p-value = 0.0008264	t = 1.754, df = 37.968, p-value = 0.08749	t = 0.57209, df = 34.786, p-value = 0.5709	0.7194786	0.8323837
14	t = 2.7981, df = 3.2997, p-value = 0.06093 NA	t = -1.2194, df = 3.2831, p-value = 0.303 NA	t = 0.2206, df = 37.222, p-value = 0.8266	t = 5.6, df = 28.257, p- value = 5.234e-06 t = 3.7196, df = 39.242, p-value = 0.0006234	t = -0.2949, df = 32.982, p-value = 0.7699	t = 0.92749, df = 33.488, p-value = 0.3603	0.8566424	1.080323
15			t = 2.9672, p-value = 0.004998		t = 0.80606, df = 40.077, p-value = 0.425	t = 2.1598, df = 40.154, p-value = 0.03681	0.6684641	0.7338696
YT European Americans (n=4)	sig: <0.001	near-sig: < 0.003						
16	t = 6.008, df = 5.1287, p-value = 0.00168	t = 0.37804, df = 2.343, p-value = 0.737	t = 0.0591, df = 30.245, p-value = 0.9533	t = 2.0961, df = 31.281, p-value = 0.04426	t = 1.683, df = 32.864, p-value = 0.1019	t = 2.0442, df = 21.124, p-value = 0.0536	0.7661807	0.84128
17	t = 2.4194, df = 1.133, p-value = 0.2253	t = -0.61763, df = 1.0586, p-value = 0.6431	t = -0.2922, df = 36.986, p-value = 0.7717	t = 0.0557, df = 27.878, p-value = 0.956	t = 1.29, df = 36.997, p-value = 0.2051	t = -0.56716, df = 36.974, p-value = 0.574	0.9501756	0.9517843
18	t = 4.7841, df = 4.4894, p-value = 0.006542	t = -10.066, df = 32.871, p-value = 1.434e-11	t = 2.0833, df = 35.701, p-value = 0.04444	t = 1.7848, df = 40.3, p-value = 0.08183	t = 2.2905, df = 49.491, p-value = 0.02629	t = -0.26019, df = 45.555, p-value = 0.7959	0.734279	0.7959298
19	t = 0.86487, df = 2.4664, p-value = 0.463	t = 0.050476, df = 6.219, p-value = 0.9613	t = -1.2951, df = 34.993, p-value = 0.2038	t = 3.3916, df = 33.286, p-value = 0.001807	t = 2.3233, df = 34.926, p-value = 0.02611	t = 0.43205, df = 25.973, p-value = 0.6693	0.9037728	1.007832

APPENDIX F – BULL-BOWL ANALYSIS

Speaker	F1 at onset	F2 at onset	Trajectory	Duration
YT 7	t = 5.7766, df = 9.9274, p-value = 0.0001836	t = 2.8902, df = 9.9564, p-value = 0.01617	t = 1.7054, df = 1.8768, p-value = 0.2383	t = -1.591, df = 1.2765, p-value = 0.3158
YT 8	t = 3.5569, df = 1.8183, p-value = 0.08118	t = 1.8475, df = 7.1518, p-value = 0.1063	t = 0.77169, df = 1.1113, p-value = 0.5708	t = 3.2132, df = 6.7168, p-value = 0.01565
YT 10	NA	NA	NA	NA
YT 11	NA	NA	NA	NA
YT 12	t = 2.7091, df = 3.7361, p-value = 0.05768	t = 3.1056, df = 10.297, p-value = 0.01078	t = 0.38578, df = 3.9784, p-value = 0.7194	t = 0.97236, df = 8.5649, p-value = 0.3575
YT 13	t = 4.8421, df = 9.3779, p-value = 0.0008164	t = -0.942, df = 2.656, p- value = 0.4237	t = 3.8759, df = 9.536, p- value = 0.003366	t = 1.2125, df = 5.332, p- value = 0.2763
YT 15	t = 5.6391, df = 8.6664, p-value = 0.000365	t = 3.0686, df = 15.005, p-value = 0.007799	6.7573, df = 22.857, p- value = 7.055e-07	t = 0.1115, df = 4.3708, p-value = 0.9162
YT 17	t = 1.321, df = 2.7724, p- value = 0.2849	t = 2.274, df = 5.0834, p- value = 0.07121	t = 3.3976, df = 10.776, p-value = 0.006125	t = 1.8517, df = 5.7708, p-value = 0.1155
YT 18	t = 1.7335, df = 11.211, p-value = 0.1104	t = 0.46729, df = 11.828, p-value = 0.6488	t = 1.2419, df = 3.302, p- value = 0.2952	t = -0.20897, df = 6.0341, p-value = 0.8413

APPENDIX G – BAG/BEG ANALYSIS

/e/ monophthongal? (/e/ distance != /a/ distance?)	
YT African Americans (n=15)	sig: <0.001
1	t = 0.6583, df = 20.861, p-value = 0.5176
2	t = 2.3723, df = 10.022, p-value = 0.03908
3	t = -0.4324, df = 21.565, p-value = 0.6698
4	t = 0.4279, df = 23.58, p-value = 0.6726
5	t = 4.3625, df = 14.261, p-value = 0.0006237
6	t = -0.7248, df = 19.87, p-value = 0.477
7	t = -2.1671, df = 28.924, p-value = 0.0386
8	t = 1.1311, df = 19.045, p-value = 0.2720
9	t = 1.7399, df = 14.714, p-value = 0.1027
10	t = 2.3261, df = 13.285, p-value = 0.03644
11	t = 4.2559, df = 16.75, p-value = 0.0005496
12	t = 1.5643, df = 12.819, p-value = 0.1421
13	t = 1.1636, df = 28.535, p-value = 0.2542
14	t = 0.8628, df = 9.575, p-value = 0.4094
15	t = 2.5299, df = 12.586, p-value = 0.02564
YT European Americans (n=4)	
16	t = 1.5394, df = 34.653, p-value = 0.1328
17	t = 1.6755, df = 2.108, p-value = 0.2294
18	t = 1.0086, df = 15.066, p-value = 0.3291
19	t = -0.8975, df = 21.021, p-value = 0.3796

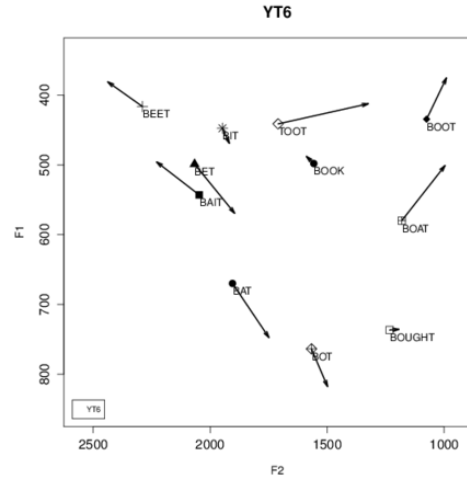
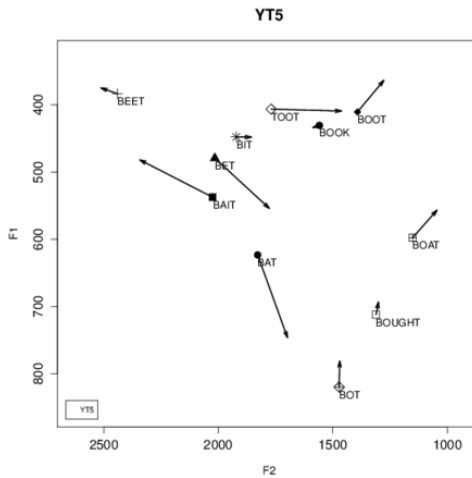
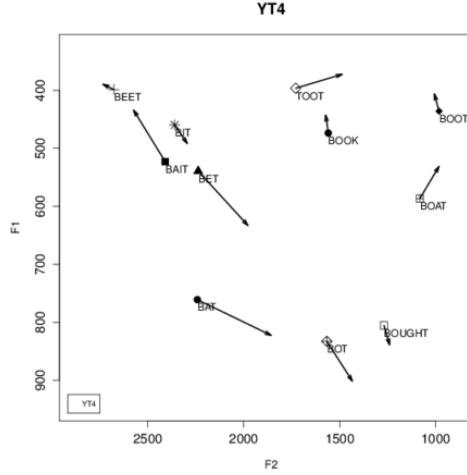
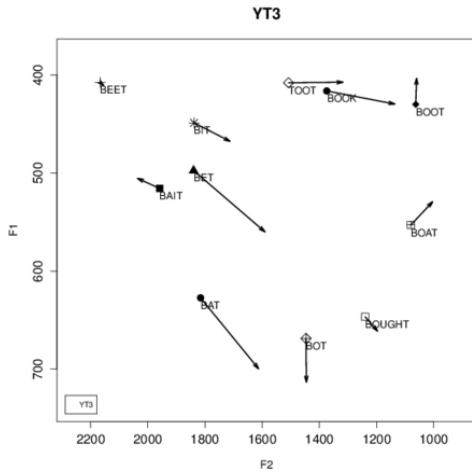
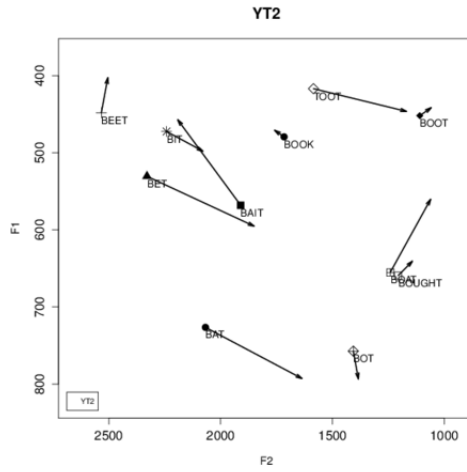
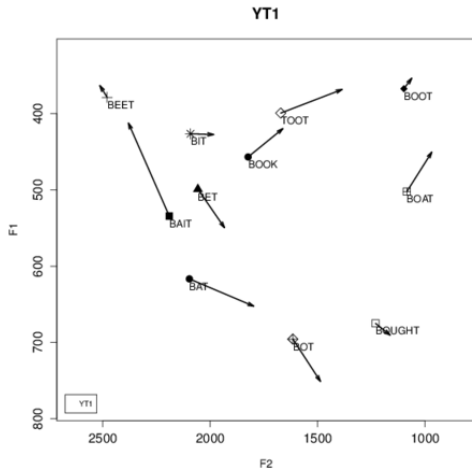
APPENDIX H – BACK VOWEL ANALYSIS

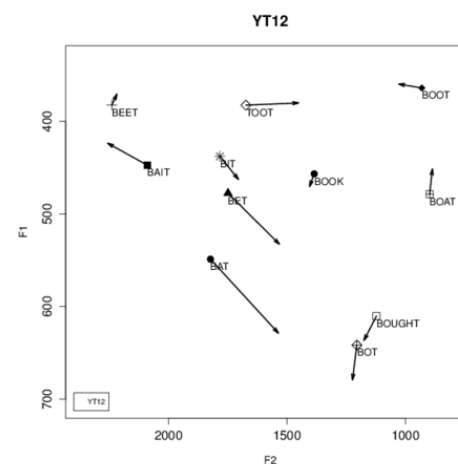
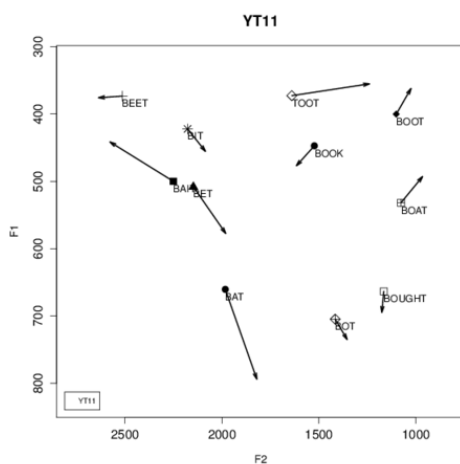
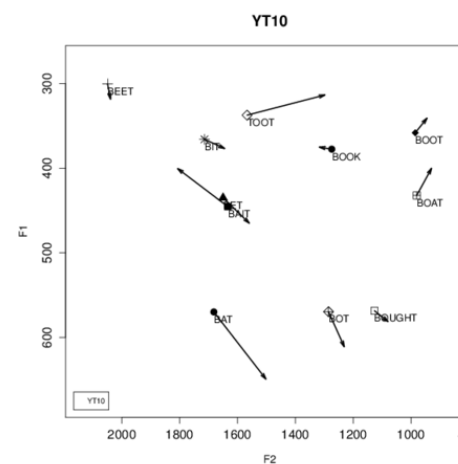
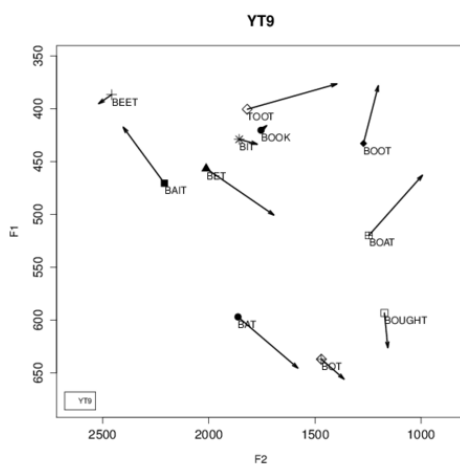
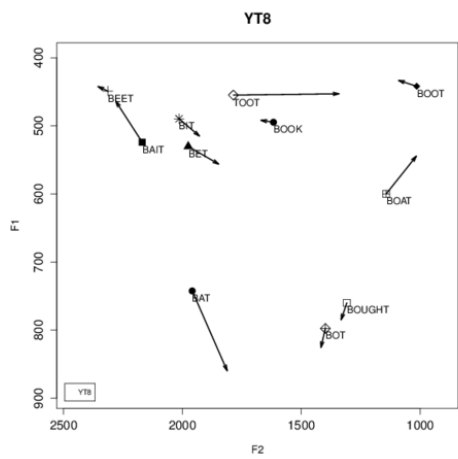
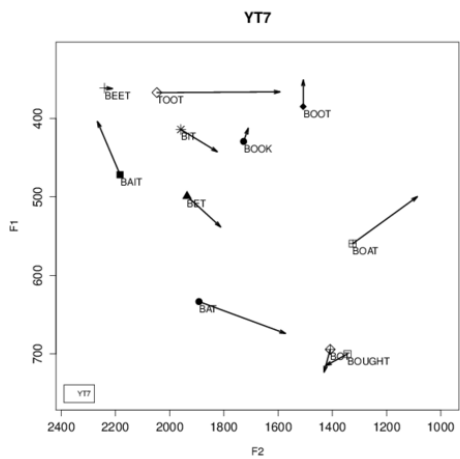
T-tests comparing high back vowel classes

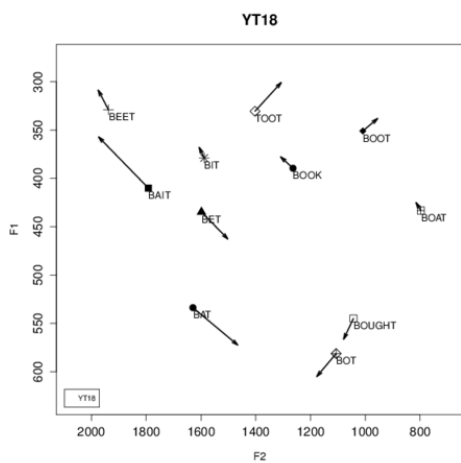
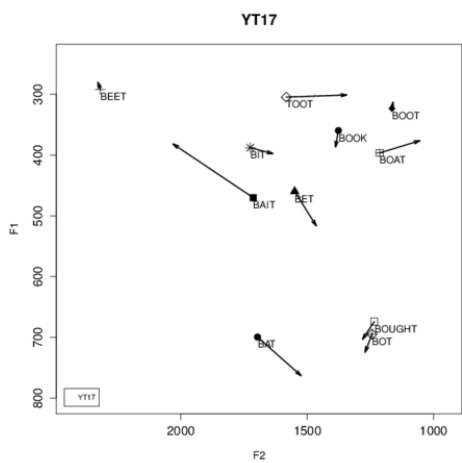
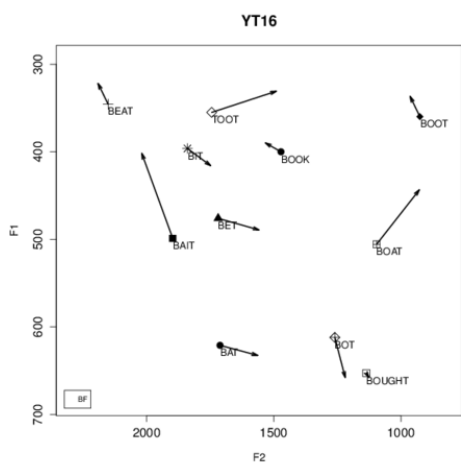
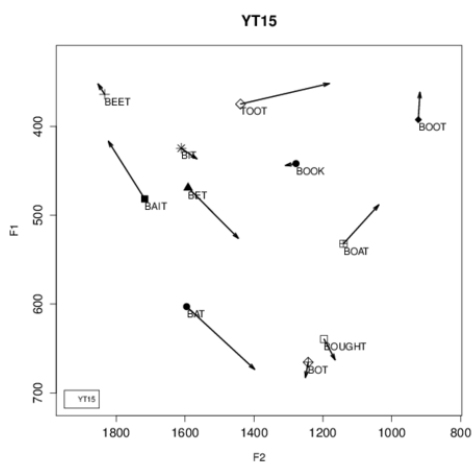
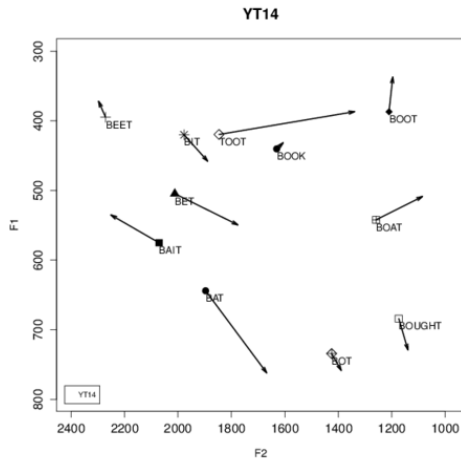
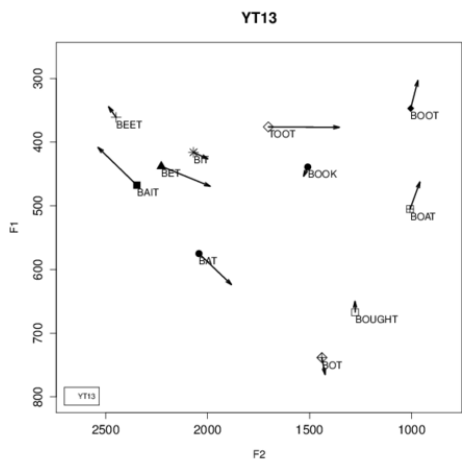
sig. value is <0.0026

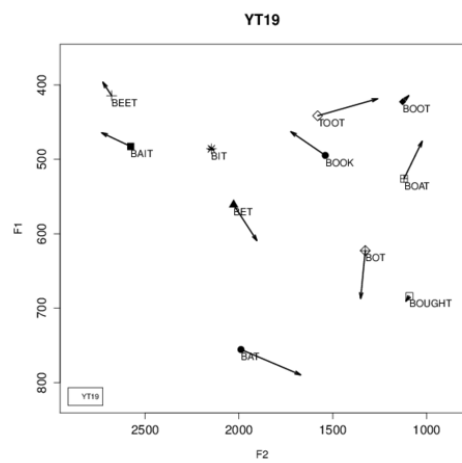
Number	TOOT/BOOT	BOOK/BOAT	BOOT/BOAT	TOOT	BOOT	BOOK	BOAT
YT1	t = 3.9645, df = 6.3361, p-value = 0.006641	t = 9.2209, df = 10.155, p-value = 2.977e-06	t = 0.86368, df = 5.3039, p-value = 0.4251	1466.395	1098.2	1734.333	1022.466
YT2	t = 1.9878, df = 9.4597, p-value = 0.07653	t = 10.753, df = 16.85, p-value = 5.8e-09	t = -0.95446, df = 7.1525, p-value = 0.371	1250.86	1006.226	1746.273	1110.319
YT3	t = 3.6278, df = 16.943, p-value = 0.002089	t = 0.68067, df = 2.0604, p-value = 0.5645	t = 0.38524, df = 12.139, p-value = 0.7067	1389.425	1053.348	1238.333	1025.501
YT4	t = 5.2178, df = 11.388, p-value = 0.0002558	t = 6.1717, df = 19.014, p-value = 6.228e-06	t = -0.55471, df = 18.525, p-value = 0.5857	1588.846	972.8727	1572.462	1014.31
YT5	t = 3.0487, df = 17.232, p-value = 0.007175	t = 5.858, df = 18.713, p-value = 1.292e-05	t = 3.2858, df = 17.187, p-value = 0.004312	1558.678	1304.951	1584.909	1079.532
YT6	t = 4.7786, df = 8.6627, p-value = 0.001116	t = 6.9309, df = 24.804, p-value = 3.022e-07	t = -0.88174, df = 12.243, p-value = 0.3949	1492.882	1005.706	1565.059	1050.916
YT7	t = 2.8345, df = 13.198, p-value = 0.0139	t = 6.3444, df = 18.404, p-value = 5.056e-06	t = 3.3352, df = 15.16, p-value = 0.004465	1829.687	1523.697	1726.273	1138.925
YT8	t = 4.678, df = 14.996, p-value = 0.0002976	t = 7.6399, df = 13.818, p-value = 2.529e-06	t = 0.3652, df = 9.5753, p-value = 0.7229	1501.337	1039.19	1657.909	1012.942
YT9	t = 1.8361, df = 12.416, p-value = 0.09039	t = 11.286, df = 14.187, p-value = 1.785e-08	t = 1.9918, df = 7.261, p-value = 0.08519	1511.533	1225.59	1731.364	1062.058
YT10	t = 6.0547, df = 9.3264, p-value = 0.0001637	t = 5.3235, df = 25.347, p-value = 1.55e-05	t = 0.972, df = 8.8451, p-value = 0.3569	1406.872	970.607	1289.474	928.8633
YT11	t = 3.638, df = 7.6511, p-value = 0.007131	t = 5.9679, df = 16.17, p-value = 1.883e-05	t = 0.067099, df = 9.2089, p-value = 0.9479	1388.378	991.008	1553.546	983.1478
YT12	t = 7.8733, df = 16.732, p-value = 5.046e-07	t = 8.239, df = 25.952, p-value = 1.028e-08	t = 2.2991, df = 20.754, p-value = 0.03199	1435.282	956.4133	1390.4	871.6391
YT13	t = 4.7379, df = 7.4365, p-value = 0.001792	t = 6.6361, df = 14.483, p-value = 9.461e-06	t = 0.55242, df = 4.7881, p-value = 0.6055	1496.199	992.445	1520.1	941.0236
YT14	t = 7.1812, df = 13.25, p-value = 6.416e-06	t = 5.6705, df = 17.257, p-value = 2.612e-05	t = 1.0614, df = 9.2653, p-value = 0.3154	1557.897	1223.007	1639.75	1150.609
YT15	t = 6.3757, df = 16.083, p-value = 8.971e-06	t = 4.2787, df = 22.051, p-value = 0.0003041	t = -2.4115, df = 15.828, p-value = 0.02841	1247.583	904.678	1297.316	1036.946
YT16	t = 8.9856, df = 18.505, p-value = 3.578e-08	t = 4.4238, df = 8.8767, p-value = 0.001719	t = -0.4894, df = 15.392, p-value = 0.6315	1611.073	913.0942	1524.111	947.2356
YT17	t = 4.971, df = 17.278, p-value = 0.0001111	t = 3.6355, df = 27.737, p-value = 0.001118	t = 1.5771, df = 18.659, p-value = 0.1316	1471.854	1183.349	1373.947	1100.265
YT18	t = 2.3504, df = 10.055, p-value = 0.04048	t = 6.4405, df = 27.217, p-value = 6.441e-07	t = 1.4918, df = 7.0716, p-value = 0.1789	1271.693	982.035	1277.8	817.748
TY19	t = 1.6374, df = 6.704, p-value = 0.1474	t = 2.7903, df = 5.3256, p-value = 0.03587	t = 1.1308, df = 6.601, p-value = 0.2975	1314.05	1091.204	1632.333	997.897

Back vowel plots









APPENDIX I – /AI/ ANALYSIS (CHAPTER 6)

Regress /ai/ trajectory on x

Call:

lm(formula = distance ~ duration + familiar)

Residuals:

Min	1Q	Median	3Q	Max
-0.46351	-0.10063	-0.01624	0.10996	0.44785

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	0.37885	0.04999	7.578	1.13e-11 ***
duration	1.95644	0.28064	6.971	2.37e-10 ***
familiaryes	-0.27054	0.03317	-8.155	5.88e-13 ***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.1703 on 111 degrees of freedom

Multiple R-squared: 0.4796, Adjusted R-squared: 0.4702

F-statistic: 51.14 on 2 and 111 DF, p-value: < 2.2e-16

Regress delta F1 on x

Call:

lm(formula = delta.F1 ~ subject_ethnicity + duration + familiar + sex_code + subject_ethnicity:sex_code)

Residuals:

Min	1Q	Median	3Q	Max
-0.5332	-0.1420	0.0020	0.1167	0.5179

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	-0.320581	0.105144	-3.049	0.00289 **
subject_ethnicityCauc	-0.204916	0.150496	-1.362	0.17616
duration	-1.592629	0.345726	-4.607	1.13e-05 ***
familiaryes	0.294140	0.050066	5.875	4.75e-08 ***
sex_code	-0.009653	0.050156	-0.192	0.84775
subject_ethnicityCauc:sex_code	0.257239	0.104590	2.460	0.01550 *

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.2004 on 108 degrees of freedom

Multiple R-squared: 0.3931, Adjusted R-squared: 0.365

F-statistic: 13.99 on 5 and 108 DF, p-value: 1.548e-10

Regress delta F2 on x

Call:

```
lm(formula = delta.F2 ~ subject_ethnicity + duration + familiar +
    sex_code + subject_ethnicity:duration + subject_ethnicity:familiar +
    duration:familiar + subject_ethnicity:sex_code + subject_ethnicity:duration:familiar)
```

Residuals:

```
   Min     1Q  Median     3Q    Max
-0.29328 -0.04639  0.00546  0.05805  0.32667
```

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	0.33093	0.07561	4.377	2.87e-05 ***
subject_ethnicityCauc	-0.62328	0.12364	-5.041	1.97e-06 ***
duration	0.60073	0.31694	1.895	0.060816 .
familiar	-0.17203	0.07175	-2.397	0.018291 *
sex_code	-0.04167	0.02561	-1.627	0.106746
subject_ethnicityCauc:duration	1.88801	0.59801	3.157	0.002085 **
subject_ethnicityCauc:familiar	0.64187	0.20684	3.103	0.002466 **
duration:familiar	0.53380	0.38506	1.386	0.168625
subject_ethnicityCauc:sex_code	0.31930	0.05388	5.926	4.08e-08 ***
subject_ethnicityCauc:duration: familiar	-4.42713	1.25755	-3.520	0.000641 ***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.0971 on 104 degrees of freedom

Multiple R-squared: 0.5363, Adjusted R-squared: 0.4961

F-statistic: 13.36 on 9 and 104 DF, p-value: 5.351e-14

Regress F1_20 on x

Call:

```
lm(formula = norm.F1_20 ~ subject_ethnicity + duration + familiar +
    sex_code + subject_ethnicity:familiar + subject_ethnicity:sex_code)
```

Residuals:

```
   Min     1Q  Median     3Q    Max
-0.48464 -0.09438 -0.00135  0.08979  0.47463
```

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	0.31849	0.08950	3.559	0.000557 ***
subject_ethnicityCauc	-0.04873	0.13935	-0.350	0.727256
duration	0.52484	0.27724	1.893	0.061047 .
familiaryes	-0.22906	0.04546	-5.039	1.91e-06 ***
sex_code	0.05263	0.04134	1.273	0.205752
subject_ethnicityCauc:familiaryes	0.23534	0.09497	2.478	0.014773 *
subject_ethnicityCauc:sex_code	-0.12868	0.08874	-1.450	0.149942

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.1606 on 107 degrees of freedom

Multiple R-squared: 0.3398, Adjusted R-squared: 0.3028

F-statistic: 9.181 on 6 and 107 DF, p-value: 4.209e-08

Regress F1_50 on x

Call:

```
lm(formula = norm.F1_50 ~ subject_ethnicity + duration + familiar +
  subject_ethnicity:duration + subject_ethnicity:familiar)
```

Residuals:

```
   Min     1Q  Median     3Q      Max
-0.34451 -0.09892 -0.00207  0.08864  0.67189
```

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	0.13471	0.05523	2.439	0.0164 *
subject_ethnicityCauc	0.04668	0.12082	0.386	0.7000
duration	0.68127	0.27446	2.482	0.0146 *
familiaryes	-0.02656	0.03743	-0.710	0.4794
subject_ethnicityCauc:duration	-1.36817	0.78036	-1.753	0.0824 .
subject_ethnicityCauc:familiaryes	0.15491	0.08713	1.778	0.0782 .

Signif. codes: 0 '****' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.1545 on 108 degrees of freedom

Multiple R-squared: 0.1655, Adjusted R-squared: 0.1268

F-statistic: 4.283 on 5 and 108 DF, p-value: 0.001362

Regress F1_80 on x

Call:

```
lm(formula = norm.F1_80 ~ duration + familiar + sex_code + duration:familiar)
```

Residuals:

```
   Min     1Q  Median     3Q      Max
-0.35555 -0.08266 -0.00834  0.08527  0.36557
```

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	-0.16932	0.06743	-2.511	0.01350 *
duration	-0.68849	0.34404	-2.001	0.04786 *
familiaryes	0.23234	0.07395	3.142	0.00216 **
sex_code	0.08434	0.02561	3.293	0.00134 **
duration:familiaryes	-0.68131	0.43429	-1.569	0.11960

Signif. codes: 0 '****' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.1267 on 109 degrees of freedom

Multiple R-squared: 0.2889, Adjusted R-squared: 0.2628

F-statistic: 11.07 on 4 and 109 DF, p-value: 1.425e-07

Regress F2_20 on x

Call:

```
lm(formula = norm.F2_20 ~ subject_ethnicity + duration + familiar +
    sex_code + subject_ethnicity:duration + subject_ethnicity:familiar +
    duration:familiar + subject_ethnicity:sex_code + subject_ethnicity:duration:familiar)
```

Residuals:

```
   Min      1Q  Median      3Q      Max
-0.31293 -0.06245  0.00279  0.05552  0.39341
```

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	-0.0758332	0.0797547	-0.951	0.34389
subject_ethnicityCauc	0.2442911	0.1304187	1.873	0.06386 .
duration	0.1661328	0.3343085	0.497	0.62028
familiaryes	0.0381757	0.0756848	0.504	0.61504
sex_code	-0.0008924	0.0270125	-0.033	0.97371
subject_ethnicityCauc:duration	-1.2859807	0.6307812	-2.039	0.04402 *
subject_ethnicityCauc:familiaryes	-0.4553314	0.2181779	-2.087	0.03934 *
duration:familiaryes	-0.2981975	0.4061558	-0.734	0.46448
subject_ethnicityCauc:sex_code	-0.1029556	0.0568359	-1.811	0.07296 .
subject_ethnicityCauc:duration: familiaryes	3.6825961	1.3264587	2.776	0.00652 **

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.1024 on 104 degrees of freedom

Multiple R-squared: 0.1773, Adjusted R-squared: 0.1061

F-statistic: 2.491 on 9 and 104 DF, p-value: 0.01281

Regress F2_50 on x

Call:

```
lm(formula = norm.F2_50 ~ subject_ethnicity + duration + familiar +
    sex_code + subject_ethnicity:familiar + subject_ethnicity:sex_code)
```

Residuals:

```
   Min     1Q  Median     3Q    Max
-0.30763 -0.05709 -0.00256  0.04890  0.34496
```

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	0.16189	0.05322	3.042	0.00296 **
subject_ethnicityCauc	-0.17487	0.08287	-2.110	0.03718 *
duration	0.23022	0.16488	1.396	0.16552
familiaryes	-0.07248	0.02704	-2.681	0.00851 **
sex_code	-0.02949	0.02459	-1.199	0.23303
subject_ethnicityCauc:familiaryes	0.11012	0.05648	1.950	0.05382 .
subject_ethnicityCauc:sex_code	0.08058	0.05277	1.527	0.12974

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.09553 on 107 degrees of freedom

Multiple R-squared: 0.08531, Adjusted R-squared: 0.03402

F-statistic: 1.663 on 6 and 107 DF, p-value: 0.1371

Regress F2_80 on x

Call:

```
lm(formula = norm.F2_80 ~ subject_ethnicity + duration + familiar +
    sex_code + subject_ethnicity:sex_code + duration:sex_code)
```

Residuals:

```
   Min      1Q  Median      3Q      Max
-0.137793 -0.052818  0.003705  0.051571  0.139794
```

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	0.02776	0.09268	0.299	0.765147
subject_ethnicityCauc	-0.22054	0.05740	-3.843	0.000207 ***
duration	2.04965	0.55413	3.699	0.000344 ***
familiaryes	-0.07704	0.01900	-4.054	9.58e-05 ***
sex_code	0.06267	0.05175	1.211	0.228532
subject_ethnicityCauc:sex_code	0.18288	0.03991	4.582	1.25e-05 ***
duration:sex_code	-0.61283	0.30521	-2.008	0.047176 *

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.07603 on 107 degrees of freedom

Multiple R-squared: 0.4752, Adjusted R-squared: 0.4458

F-statistic: 16.15 on 6 and 107 DF, p-value: 3.718e-13

APPENDIX J – CASE STUDY /AI/ ANALYSIS

Regress Auditory reduction on x

Call:

```
glm(formula = cat_1 ~ interlocutor_rate + environment + interlocutor_ethnicity,
     family = binomial)
```

Deviance Residuals:

Min	1Q	Median	3Q	Max
-1.1546	-0.6322	-0.4049	-0.2472	2.4746

Coefficients:

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	-1.69449	0.49594	-3.417	0.000634 ***
interlocutor_rate	0.03281	0.01117	2.938	0.003301 **
environmentnasal	-0.46419	0.42296	-1.097	0.272439
environmentvcd	-1.22504	0.44272	-2.767	0.005656 **
environmentvcls	-1.29962	0.58750	-2.212	0.026958 *
interlocutor_ethnicityCauc	-1.31449	0.77266	-1.701	0.088894 .

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 291.23 on 321 degrees of freedom
 Residual deviance: 258.61 on 316 degrees of freedom
 AIC: 270.61

Number of Fisher Scoring iterations: 6

Regress F1 at vowel onset on x

Call:

lm(formula = twenty_F1 ~ interlocutor_ethnicity + environment)

Residuals:

Min	1Q	Median	3Q	Max
-434.885	-83.516	3.099	81.583	424.847

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	864.44	20.07	43.078	< 2e-16 ***
interlocutor_ethnicityCauc	85.12	19.63	4.336	1.95e-05 ***
environmentnasal	26.41	24.13	1.095	0.275
environmentvcd	-25.61	23.24	-1.102	0.271
environmentvcls	-6.56	27.63	-0.237	0.812

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 135 on 317 degrees of freedom

Multiple R-squared: 0.0814, Adjusted R-squared: 0.06981

F-statistic: 7.023 on 4 and 317 DF, p-value: 1.988e-05

Regress F2 at vowel onset on x

Call:

lm(formula = X20_F2 ~ environment + familiar)

Residuals:

Min	1Q	Median	3Q	Max
-806.96	-118.35	-5.35	116.13	391.94

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	1534.80	26.84	57.194	< 2e-16 ***
environmentnasal	107.10	29.43	3.639	0.00032 ***
environmentvcd	80.95	28.40	2.851	0.00465 **
environmentvcls	-44.79	33.67	-1.330	0.18436
familiar	53.19	19.48	2.730	0.00668 **

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 164.7 on 317 degrees of freedom

Multiple R-squared: 0.1251, Adjusted R-squared: 0.1141

F-statistic: 11.33 on 4 and 317 DF, p-value: 1.316e-08

Regress $\Delta F1$ on x

Call:

lm(formula = delta_F1 ~ interlocutor_ethnicity + interlocutor_rate)

Residuals:

Min	1Q	Median	3Q	Max
-546.26	-87.65	23.05	102.68	304.63

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	-164.9491	19.5966	-8.417	1.32e-15 ***
interlocutor_ethnicityCauc	-56.2023	24.1296	-2.329	0.0205 *
interlocutor_rate	1.1821	0.5901	2.003	0.0460 *

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 151.3 on 319 degrees of freedom

Multiple R-squared: 0.0481, Adjusted R-squared: 0.04214

F-statistic: 8.06 on 2 and 319 DF, p-value: 0.0003846

Regress $\Delta F2$ on x

Call:

lm(formula = delta_F2 ~ interlocutor_rate + familiar + environment +
familiar:environment)

Residuals:

Min	1Q	Median	3Q	Max
-751.60	-176.87	-14.16	164.03	692.80

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	449.5913	60.8534	7.388	1.36e-12 ***
interlocutor_rate	-1.4097	0.9274	-1.520	0.1295
familiar	-90.4178	76.3977	-1.184	0.2375
environmentnasal	-27.1261	73.1082	-0.371	0.7109
environmentvcd	-71.4048	70.3032	-1.016	0.3106
environmentvcls	-6.6732	84.3002	-0.079	0.9370
familiar:environmentnasal	-43.4806	93.1526	-0.467	0.6410
familiar:environmentvcd	47.7879	89.7842	0.532	0.5949
familiar:environmentvcls	244.0261	106.6807	2.287	0.0228 *

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 252.3 on 313 degrees of freedom

Multiple R-squared: 0.122, Adjusted R-squared: 0.09959

F-statistic: 5.438 on 8 and 313 DF, p-value: 1.979e-06

Regress Euclidean distance on x

Call:

lm(formula = norm_distance ~ interlocutor_ethnicity + interlocutor_rate +
familiar + environment + familiar:environment)

Residuals:

Min	1Q	Median	3Q	Max
-3.4193	-0.9490	-0.1106	0.7096	4.0083

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	4.109481	0.330644	12.429	< 2e-16 ***
interlocutor_ethnicityCauc	0.303857	0.214942	1.414	0.158457
interlocutor_rate	-0.015411	0.005271	-2.924	0.003711 **
familiar	-0.826300	0.400698	-2.062	0.040021 *
environmentnasal	-0.870794	0.385564	-2.258	0.024605 *
environmentvcd	-1.408096	0.368752	-3.819	0.000162 ***
environmentvcls	-0.834669	0.443545	-1.882	0.060792 .
familiar:environmentnasal	0.316002	0.490005	0.645	0.519469
familiar:environmentvcd	0.537352	0.470882	1.141	0.254678
familiar:environmentvcls	1.493517	0.560560	2.664	0.008115 **

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 1.323 on 312 degrees of freedom

Multiple R-squared: 0.1972, Adjusted R-squared: 0.1741

F-statistic: 8.518 on 9 and 312 DF, p-value: 2.086e-11

APPENDIX K – CASE STUDY PIN-PEN ANALYSIS

Regress F1 at midpoint on x

Call:

lm(formula = F1.midpoint ~ ethnicity + vowelipa + place_p + ethnicity *
vowelipa)

Residuals:

Min	1Q	Median	3Q	Max
-237.111	-54.987	-6.047	52.597	411.883

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	679.60	23.15	29.350	< 2e-16 ***
ethnicityCauc	-71.61	28.15	-2.544	0.0123 *
ethnicityMS	-32.23	26.97	-1.195	0.2347
vowelipa\\ic	-10.09	32.34	-0.312	0.7557
place_pbilabial	-123.12	24.25	-5.077	1.51e-06 ***
place_pdental	26.75	40.98	0.653	0.5153
place_pglottal	76.80	62.32	1.233	0.2203
place_pinitial	-224.19	106.46	-2.106	0.0374 *
place_plabio-dental	-79.86	40.87	-1.954	0.0531 .
place_plateral	-34.31	63.17	-0.543	0.5881
place_ppost-alveolar	-26.13	54.78	-0.477	0.6343
place_pvelar	26.16	37.22	0.703	0.4836
ethnicityCauc:vowelipa\\ic	85.62	51.15	1.674	0.0969 .
ethnicityMS:vowelipa\\ic	-33.42	51.03	-0.655	0.5138

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 103.9 on 114 degrees of freedom
Multiple R-squared: 0.3146, Adjusted R-squared: 0.2364
F-statistic: 4.025 on 13 and 114 DF, p-value: 2.053e-05

Regress F2 at midpoint on x

Call:

lm(formula = F2.midpoint ~ ethnicity + place_p)

Residuals:

Min	1Q	Median	3Q	Max
-330.66	-91.45	12.34	105.35	333.98

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	1900.418	29.340	64.772	< 2e-16 ***
ethnicityCauc	48.547	32.064	1.514	0.1327
ethnicityMS	81.378	31.849	2.555	0.0119 *
place_pbilabial	29.699	31.676	0.938	0.3504
place_pdental	8.426	56.482	0.149	0.8817
place_pglottal	198.437	86.464	2.295	0.0235 *
place_pinitial	12.512	147.244	0.085	0.9324
place_plabio-dental	98.004	49.976	1.961	0.0523 .
place_plateral	47.668	87.365	0.546	0.5864
place_ppost-alveolar	67.143	75.912	0.884	0.3782
place_pvelar	204.195	50.551	4.039	9.62e-05 ***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 144.3 on 117 degrees of freedom

Multiple R-squared: 0.1959, Adjusted R-squared: 0.1272

F-statistic: 2.851 on 10 and 117 DF, p-value: 0.003285

Regress Euclidean distance on x

Call:

lm(formula = distance ~ place_p + vowelipa)

Residuals:

Min	1Q	Median	3Q	Max
-177.81	-83.57	-10.05	49.94	401.05

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	228.661	18.821	12.149	< 2e-16 ***
place_pbilabial	-35.384	26.877	-1.316	0.190559
place_pdental	-8.564	45.686	-0.187	0.851630
place_pglottal	391.809	70.538	5.555	1.75e-07 ***
place_pinitial	-85.266	119.240	-0.715	0.475975
place_plabio-dental	-58.047	45.893	-1.265	0.208421
place_plateral	-65.127	70.538	-0.923	0.357736
place_ppost-alveolar	88.342	61.808	1.429	0.155563
place_pvelar	317.725	40.370	7.870	1.90e-12 ***
vowelipa\\ic	-94.803	27.615	-3.433	0.000824 ***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 117.7 on 118 degrees of freedom

Multiple R-squared: 0.5627, Adjusted R-squared: 0.5293

F-statistic: 16.87 on 9 and 118 DF, p-value: < 2.2e-16

APPENDIX L – CASE STUDY COT-CAUGHT ANALYSIS

ANOVA: F1 at midpoint by vowel class (*got*, COT, CAUGHT)

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Vowel class	2	11014	5507	0.334	0.717
Residuals	395	6521346	16510		

ANOVA: F2 at midpoint by vowel class (*got*, COT, CAUGHT)

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Vowel class	2	2396294	1198147	60.76	<2e-16 ***
Residuals	395	7788801	19718		

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Tukey HSD: F2 at midpoint by vowel class (*got*, COT, CAUGHT)

Tukey multiple comparisons of means
95% family-wise confidence level

Fit: aov(formula = F2.50 ~ class.2)

\$vowel.class

	diff	lwr	upr	p adj
COT-CAUGHT	41.95364	6.817052	77.09022	0.0144037
got-CAUGHT	259.54538	204.077374	315.01339	0.0000000
got-COT	217.59174	161.747766	273.43572	0.0000000

Regression: F2 at midpoint by vowel class, ethnicity, preceding POA, following POA, and interactions

Call: lm(formula = F2.50 ~ class.2 + Ethnicity + preceding.poa + following.poa + class.2:Ethnicity)

Residuals:

Min	1Q	Median	3Q	Max
-427.83	-84.40	-6.82	71.65	413.88

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	1434.86	17.22	83.301	< 2e-16 ***
class.2COT	86.69	20.65	4.197	3.36e-05 ***
class.2got	262.91	34.06	7.719	1.02e-13 ***
EthnicityEA	41.53	22.38	1.856	0.06427 .
preceding.poaalglottal	-67.71	26.39	-2.566	0.01066 *
preceding.poaalabial	-113.57	22.59	-5.028	7.62e-07 ***
preceding.poaalveolar	-18.01	24.55	-0.734	0.46346
following.poaalabial	-56.55	20.19	-2.801	0.00536 **
following.poaalopen	-81.25	38.74	-2.097	0.03661 *
following.poaalveolar	-28.98	20.89	-1.387	0.16616
class.2COT:EthnicityEA	-59.23	33.41	-1.773	0.07706 .
class.2got:EthnicityEA	-133.04	55.80	-2.384	0.01759 *

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 130.8 on 386 degrees of freedom

Multiple R-squared: 0.352, Adjusted R-squared: 0.3335

F-statistic: 19.06 on 11 and 386 DF, p-value: < 2.2e-16